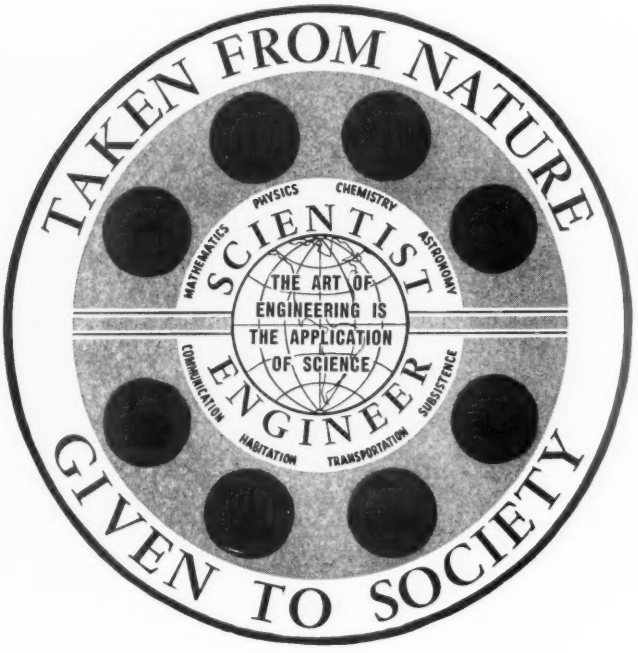
NOVEMBER—1943



In this issue:

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Post War Education

SOME COMMENTS PROMPTED BY PROPOSALS

CONTAINED IN OCTOBER AND NOVEMBER ISSUES

The subject of Post War Education is presently running the gamut of public and private discussion and debate. In every proposal concerning the kind of community, nation and world that will, or should, prevail after the official close of hostilities, there is included the item of education as a sine qua non of the social justice and economic equality promised for tomorrow.

After traveling several thousand years with education constantly advancing and the scope and horror of war constantly expanding, one might be pardoned for manifesting the temerity to suggest that either education begets war or what serves as education is a misnomer. For many years the goal of formal education has been primarily to make man fit, not to make him good. While condemning certain nations for stressing the survival of the fittest as an objective others, including America, have increasingly made specialized training the tool for accomplishing a similar end.

One may well inquire wherein does this subject merit the particular concern of engineers. A partial answer is to be found in the scholastic pattern, especially applicable to engineers, described in The American Engineer of October and November by Dr. Edwin S. Burdell, the distinguished director of a well known engineering school. His specific proposals are not novel. To a limited extent they are already in practice. To a greater extent they will be subscribed to by the practicing engineer who appreciates that his successor in the profession must be prepared to assume the role of Citizen Engineer. However it is with some of the generalizations of Dr. Burdell's discussion that time might profitably be spent by those interested in the subject of Education.

"An understanding of nature and human nature" can be achieved through the application of the inductive reasoning used in the study of the sciences and their adaptation to human needs as well as by means of the deductive processes generally applied to philosophy, religion, literature, languages and the fine arts. This conviction expressed by an educator, while neither new nor striking, is challenging in that it suggests that processes and methods are but tools men use and that truth and knowledge are wholly independent of man made avenues of approach to their attainment. Extending this premise one may well contend that no greater harm can be done to the aims of human enlightenment than to enthrone the process of what is termed education in a world wherein man needs satisfy his physical and innate spiritual longing, as well as manifest those human weaknesses which distinguish him as an imperfect being, before turning thinker and student.

To some, especially those so fortunate as to be able to philosophize upon, rather than endure, the pangs of human toil and strife, an intangible, unmeasurable and controversial something called Education is the road to a human millennium. All that is required is a constant increase in the prescribed amount as formulated by experts. Regardless of the pros and cons of so-called expert opinion on the various forms and methods of education, the latter is invariably held forth as the key to man's adherence to truth and justice and to the elimination of disease and crime. How childlike, how unimaginative, how contrary to human experience, how unresponsive to the recorded expressions of history are such contentions. Is there even a modicum of unimpeachable evidence to prove that knowledge per se brings peace and contentment to the human being, or that a world composed of college professors would be one iota more endurable than one of farmers and merchants or even Hindus and Kaffirs?

Of course education is important to civilized life but it is not an end in itself. At best it can be but a means toward understanding and when the medicine administered is ineffective it is a change of prescription, rather than increased dosages of the same that should be considered. To suggest or imply that enough education will or could satisfy man's physical cravings, replace his innate spiritual aspirations or o'erstay the whips and scorns of time, the oppressor's wrong, the proud man's contumely, the pangs of despised love, the insolence of office and the spurns that patient merit of the unworthy takes, but bespeaks a dearth of those faculties which supposedly distinguish man from the rest of the animal kingdom.

The order and infallibility which prevails in the physical universe exists not within any human dominion. True education should make man conscious, not so much of his accomplishments, as, of his relative insignificance in the universal scheme of things. No person should be better able to appreciate this than the scientist and engineer who, at least partially conversant with the order and inexorable principles of the physical universe, must at the same time live within the framework of a society which is, and will remain, a manifestation of imperfect thought and action, no matter how much mass education it possesses. In the realm of knowledge and accomplishment, the engineer has progressed far beyond the social attainments of civilization. Perhaps his processes of thought are more effective. Perhaps as Dr. Burdell suggests, more use of inductive reasoning would contribute greatly to the ultimate aim of all education. Perhaps also the engineer could help pioneer the way to a new era of enlightenment through greater interest and participation in the endeavor termed education. Surely he can succeed no less than have the orthodox educators of yesteryear in helping mankind to achieve peace and understanding. If he will but realize always that he is a creature dependent upon a Creator he might well and effectively utilize his knowledge and his processes of thought to impress a world of education which sadly needs to be convinced, that more and more scholastic training is not the cure for human pain and distress and that a trained intellect tempered by the dictates of a developed conscience rather than a neglected conscience ruled by a strained intellect is the true purpose of education.

SUPERORGANIZING PROFESSIONAL ENGINEERS

A REVIEW OF EXISTING U. S. AGENCIES

REVEALS NEED OF UNIFIED NATIONAL LEADERSHIP FOR THE ENGINEERING PROFESSION

Founder Societies Study Problem

BY DR. A. B. PARSONS

Together with an Editorial from "The American Engineer" — 1932 and comments by Past President Steinman of N.S.P.E.

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DR. A. B. PARSONS
Secretary American Institute of Mining Engineers; Editor—Mining and Metallurgy

The September issue of Mining and Metallurgy carries a most interesting and enlightening dissertation on the subject of organizing professional engineers by Dr. A. B. Parsons, Secretary of the American Institute of Mining and Metallurgical Engineers and Editor of Mining and Metallurgy. It is significant to note that the Founder Technical Societies are investigating the possibilities for organizing the entire profession under a single engineering agency and leadership. As far back as 1932, The American Engineer, then the official publication of The New York State Society of Professional Engineers suggested, in an editorial, the formation of an American Academy of Engineering comprehensive enough in scope (in order to justify the term "American") to provide for membership from Canada and other American countries if the latter desired such affiliation. Charts of organization were also prepared. Although the form of the suggested Academy was somewhat different from that discussed in the present article, the basis of unity was laid down and could be developed. So pertinent to the subject here discussed by Dr. Parsons is the editorial in question that the present Editor of The American Engineer (also the previous one) takes the liberty of reproducing the same with the contribution of the Author. Also presented herewith are comments prepared by Past President D. B. Steinman, one of the original apostles of the National Society of Professional Engineers. As time passes it is becoming increasingly clear that N.S.P.E., and its affiliated State Societies, is the only existing national engineering agency with a definite role, definite membership standards and a workable form of organization. Although there are various statements and views with which the members of N.S.P.E. could take issue, some of which are discussed by Dr. Steinman, one feels constrained to congratulate Dr. Parsons on his splendid presentation and to express the opinion that he has contributed materially to the objective of a unified profession.

An often repeated criticism of the profession of engineering is that as a whole it lacks solidarity, organization, co-ordination, and leadership. Significantly, the critics are all engineers. Other members of the body politic either do not know about the absence of organization or they do not care. If engineers have no *organization* they have a plethora of *organizations.* There exist in the United States today some 350 societies, institutes, clubs, associations, and councils of engineers and engineering technologists and this number excludes several hundred local chapters of national societies, trade associations, and local engineers' clubs of purely social character. Successful engineers must be proficient in analyzing, planning, and coordinating, but it is generally admitted that for their profession as a whole their success in this respect has been indifferent.

Recently, a subcommittee of the Joint Conference Committee, consisting of the presidents, junior past presidents, and secretaries of the Founder Societies, and of the American Institute of Chemical Engineers, has been appointed to investigate the whole question with a view to the possible formulation of "recommendations as to the best plan for organizing the engineering profession as a whole."

Engineering organizations have two reasonably distinct kinds of function:

(1) Dealing with technologic and professional matters and

(2) Dealing with political and legislative matters, so far as engineers are concerned as part of a professional group rather than as individual citizens.

With respect to the first function, the greatest weakness, perhaps, is that too many organizations are striving to do much the same thing. Competition, duplication, overlapping, and confusion of field and function tend to cause waste of effort. On the other hand, few will question the excellency of results. Progress in every branch of engineering technology is phenomenal; and duplication and competition at worst are not unmixed evils. It is frequently pointed out that the trend has been toward the formation of new and smaller societies each to deal with a specialized segment of a broad technologic field. Another symptom of this trend has been the added emphasis given to semi-autonomous Technical Divisions within the larger societies. Perhaps decentralization is logical and sound from the standpoint of efficiency in dealing with technologic matters.

Probably the most vigorous complaint of the self-critics

is that no superorganization or agency exists that can speak with validity in behalf of the profession as a whole on matters of public interest—on broad civic, social, economic, and political questions. Not all engineers are agreed that such an agency is desirable, or, if desirable, that it is practical. Some point out that the American Engineering Council over a period of twenty years spent $600,000 in Washington trying to "represent" the engineering profession. The auspices were excellent but the Council failed to make a niche for itself and eventually folded up in 1940. This debacle may have been due to short-comings inherent in the plan of organization, to failure to enlist men with adequate "oomph" for window dressing, or inability to obtain the right men as active officers and members of the salaried staff for the Council. Or it may be that there really is no tangible objective, or essential function, as a compelling reason for maintaining a super engineering organization.

Some engineers profess to see inherent and irreconcilable differences of outlook between groups in the profession with respect to political and legislative matters, especially where economics is involved. At the risk of overgeneralization and by way of illustration, consider the following: A typical civil engineer works for a government agency—municipal, county, state, or federal; whereas a typical electrical engineer is an employee of a private corporation, usually a prosperous public utility company. The difference in environment is significant.

The rank and file of civil engineers, and to a less extent mechanical engineers, are draftsmen and designers, whereas mining and chemical engineers most often are foremen and superintendents engaged in construction and operation of plants and having direct charge of skilled and unskilled workmen. Possibly this helps explain why civil engineers find it practical and desirable to devise wage and salary scales for themselves, establishing standard rates of compensation appropriate to successive rungs on the professional ladder; wheras others regard it as impossible to grade, classify, and fix salary brackets in accordance with titles held.

More and more, engineers are assuming high executive and administrative duties, frequently filling top positions in corporations formerly pre-empted by bankers, lawyers, and so-called businessmen. Naturally such men are highly influential in establishing the policies of engineering societies.

It is possible that these various tendencies contribute to the difficulty of obtaining unity and solidarity in the profession.

Various are the motives of those who advocate the establishment of a super group to represent the entire profession. Some, frankly, see a material advantage to be gained by the individual engineer. Thoroughly and strongly organized, 200,000 professional engineers, they argue, can command higher wages, salaries, and fees. Some have in mind enhancing the importance and eclat of the profession and of its members in the public eye by creating political lobbies or economic blocs that can influence local, state, or even national legislation or social trends. Others are more altruistic. They want the professional engineer to accept greater responsibility in matters of civic importance. They want the engineer to contribute in the full measure of which he is capable to the welfare of the public and humanity. That he thereby will gain prestige for the profession is a by-product—though, even to them, not one to be ignored.

To provide a background for considering suggestions for reorganizing, the following inventory of engineering organizations as they exist today has been compiled. The figures giving the number in each category are largely conjectural but are believed conservative:

(1) National engineering (commonly known as Founder) societies having individual members and dealing with technologic, engineering, and professional matters. These are:

American Society of Civil Engineers
American Institute of Mining and Metallurgical Engineers
American Society of Mechanical Engineers
American Institute of Electrical Engineers

(2) National societies generally similar to the Founder Societies—about fifteen, of which the following are typical:

American Institute of Chemical Engineers
American Society of Radio Engineers
American Institute of Consulting Engineers
Society of Automotive Engineers

(3) Local Sections of national societies listed under (1) and (2), deriving both membership and funds from the parent national organizations—probably 300.

(4) Regional, state, and local societies having their own officers, members, and dues, dealing primarily with technology and professional matters and usually including members from the various branches of the profession—perhaps 200, of which the following are typical:

Western Society of Engineers
Utah Society of Professional Engineers
Engineers' Society of Western Pennsylvania
Engineers' Society of Milwaukee

(5) National organizations having individual members but that specifically avoid technology and confine themselves primarily to (a) public relations; (b) economic welfare of engineers; and (c) political activities, with minor attention to professional matters. The two best known are:

National Society of Professional Engineers
American Association of Engineers

(6) State organizations that have the same objectives and functions as (5) above and whose members must be "licensed" or "registered" engineers in the State—about 25, among which are:

New York State Society of Professional Engineers
Pennsylvania State Society of Professional Engineers
New Jersey Society of Professional Engineers

(7) State organizations essentially similar to (6), except that membership is open to others than "licensed" engineers—about 20, of which the following are examples:

Massachusetts State Engineers' Association
Kentucky Society of Professional Engineers
Idaho Society of Engineers
Iowa Engineering Society

(8) National organizations that have no individual members but consist of representatives of national engineering societies for which they are joint agencies—perhaps 20, including the following:

Engineers' Council for Professional Development
Engineering Societies' Library Board
The Engineering Foundation
American Standards Association
National Research Council

(9) National organizations having individual members and performing special functions relating to engineering. Outstanding among these are:

Society for the Promotion of Engineering Education
American Association for the Advancement of Science

(10) National and regional organizations having individual membership that are closely akin to engineering societies because of the nature of their fields and activities —probably 75, of which the following are typical:

American Chemical Society
American Society for Testing Materials
American Association of Petroleum Geologists

them under three heads as shown on Chart 1. The authors explicitly disavow a desire to present this plan as something perfect. It is submitted rather to "show ways and means in which various ideas might be put into practice as well as to show their relation to each other and to the problem [of uniting the engineering profession] as a whole."

One significant conviction is made clear: that a *sine qua non* of any organization is a mouthpiece in the shape of a periodical publication. Establishment of four new magazines is proposed, one for each of the Divisions and a "super-duper" *Journal,* appearing weekly or monthly for the Academy itself. The report says: "This *Journal* would contain such nontechnical material as concerns the engineer's relation to government, society, business, education, and the other professions. It would become the social bond between engineers of all labels, of all interests and responsibilities. At one stroke it would contribute to the free exchange of thought among all engineers and provide the entire profession with a wide-spread, effective means of expression. Its editors, as a basis for informative articles, could determine regularly by secret ballot of the membership, the consensus on questions raised and studied."

According to the plan, the magazines for the Divisions of the Academy will be of the *Digest* type—the objective

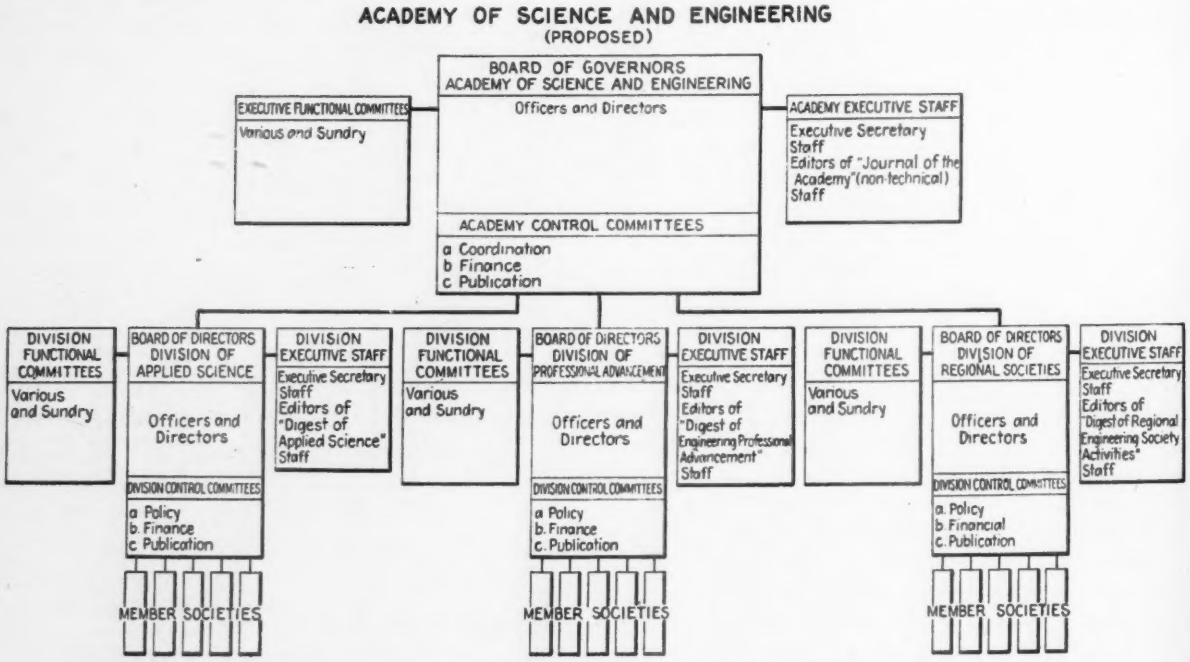

CHART 1. Superorganization of Engineers as Proposed by Electrical Engineers in Cincinnati

American Waterworks Association
American Welding Society
Society of Naval Architects
American Ceramic Society

One of the most elaborate plans for a superorganization was prepared early in 1941 by a special committee of past chairmen of the Cincinnati Section of the American Institute of Electrical Engineers. Essentially it proposes to coordinate the activities of all existing societies, grouping apparently being to stimulate the interest, for example, of civil, chemical, and automotive engineers in the activities of metallurgical, ceramic, and electrical engineers. They will not carry advertising, presumably because this would tend to create competition with the existing publications of the various societies. As to the Academy's magazine, on the other hand, "in order to help finance this publication it is proposed that advertisements of nonengineering type be included." The degree of success of such a ven-

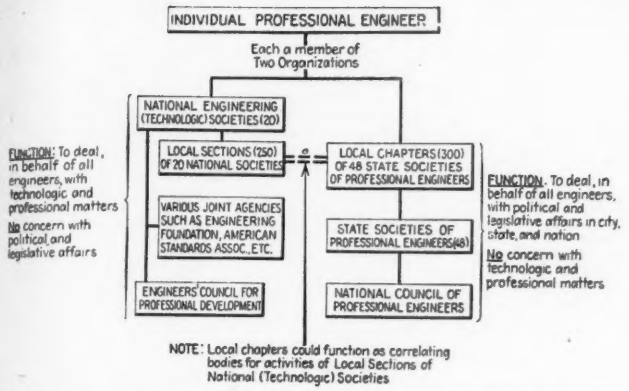
INDIVIDUAL PROFESSIONAL ENGINEER
Each a member of Two Organizations
NATIONAL ENGINEERING (TECHNOLOGIC) SOCIETIES (20)
FUNCTION: To deal, in behalf of all engineers, with technologic and professional matters
No concern with political and legislative affairs
LOCAL SECTIONS (250) OF 20 NATIONAL SOCIETIES
VARIOUS JOINT AGENCIES SUCH AS ENGINEERING FOUNDATION, AMERICAN STANDARDS ASSOC., ETC.
ENGINEERS' COUNCIL FOR PROFESSIONAL DEVELOPMENT
LOCAL CHAPTERS (300) OF 48 STATE SOCIETIES OF PROFESSIONAL ENGINEERS
STATE SOCIETIES OF PROFESSIONAL ENGINEERS (48)
NATIONAL COUNCIL OF PROFESSIONAL ENGINEERS
FUNCTION. To deal, in behalf of all engineers, with political and legislative affairs in city, state, and nation
No concern with technologic and professional matters
NOTE: Local chapters could function as correlating bodies for activities of Local Sections of National (Technologic) Societies

CHART 2. Division of Engineering Societies According to Function

ture is problematical because competition for advertising in general magazines is extremely keen.

Four new executive secretaryships as well as four new editor-in-chiefships would be created and secretaries and editors all seem to need salaries and salaried staffs. Admittedly, the program provides an imposing and correspondingly expensive superstructure for the present societies, of which none seems to be oversupplied with funds or income. Nevertheless, it is a thoughtful analysis and deserves careful study by those who advocate unification and solidarity.

A much more simple suggestion for realignment to facilitate the attainment of some of the desired objectives is illustrated in Chart 2. One basic assumption is that a sharp line of demarcation should be drawn between organizations that deal with technical and professional matters and those that deal with political and legislative matters. When the professional engineer, through the medium of his national technologic society, ventures into politics he is on thin ice. On the other hand, something is to be said in favor of an appropriate arrangement whereby the profession can express, with authority, the view on legislative matters of a preponderant majority of its members. To ascertain a view of this kind, recourse must be had, as Congressmen say, to the "grass roots"; and a suitable mechanism must be provided for an accurate and speedy—an important requirement—referendum.

A mechanism of this kind is indicated on the right hand side of Chart 2. The head of the National Council (stationed in Washington) would simply dispatch 48 letters or telegrams to the executive heads of the state societies. Reference would be made promptly to the officials of the local chapters; and in relatively short order 48 replies would be returned to Washington on which could be based an authentic statement of the position of the engineering profession—provided, of course, sentiment on a controversial point were not so evenly divided as to make any statement meaningless. A cynical person, familiar with the genus engineer, might remark that, generally, this would be the case!

Something more than a nucleus for an organization of this kind already exists in the National Society of Professional Engineers. A national agency is established and has an office in Washington; twenty state societies already are affiliated, many of the largest states being on the roster; and several of the state societies today have a substantial number of local chapters.

No opinion is expressed here as to whether it is desirable to develop further the National Society; or as to how and to what extent revamping could or should be attempted. But there it stands! At least it offers a model on which a Council can be established; and it is the kind of mechanism that can put democratic processes into operation. Many believe that one of the reasons for the failure of the American Engineering Council was that it was financed and dominated by the boards of three national societies and that it had no way of tapping country-wide opinion.

Another going concern is the Engineers' Council for Professional Development, established specifically to promote the very things that the proponents of solidarity advocate in the broad field described as "professional" activities. Parts of its program are sometimes criticized as being too intangible, too idealistic; but it is slowly making progress in a dignified way and in the right direction. Perhaps it should be strengthened. Perhaps it deserves a monthly magazine to promote some of the objectives outlined in the proposal for the hypothetical *Journal* of the Academy of Science and Engineering.

Of the plan roughly outlined in Chart 2 these things may be said:

(1) No two organizations duplicate each other's efforts, except where there may be overlapping in the fields of two technical societies.

(2) No new organization needs to be established though some may need reorganization; and some, incidentally, might be abolished with over-all benefit to the profession as a whole.

(3) The specific field of activity, the objectives, and the functions of each agency (or group of agencies) are clearly defined and authority and responsibility flow logically.

In the end, the question as to the value of any program should hinge on one thing: will it benefit the engineering profession as a whole—or, to put it another way, will it tend to make of the individual engineer a more competent, more influential, and more useful member of society?

AN ACADEMY OF ENGINEERING

NATIONAL SOCIETIES SHOULD UNITE

(*From the American Engineer of September,* 1932)

Within the last twenty years more than a score of self-styled national societies of a technical or scientific character, other than the so-called Founder Societies, have come into being. The membership in most of these is composed of persons who specialize in one or more particular phases of engineering. Unfortunately for the profession these organizations have helped to create in the public mind the impression that engineering is a nondescript calling which includes, as a recent critic expressed it, "Alike the President of the United States and the backwoods mechanic." While in some instances the require-

ments of admission are such as to restrict the membership to qualified engineers the said requirements, in general, vary to such an extent that other societies admit persons who are not engineers nor even associated with engineers, except in so far as they contribute materials or workmanship for engineering projects. Some so-called national engineering societies are not, in truth, engineering bodies at all and are composed of salesmen, sociologists, mechanics and various others who are not possessed of either engineering training or engineering practice.

A reflection upon the situation will readily convince any impartial reviewer that the indiscriminate organization of engineering societies is harmful to the profession and to the prestige of the professional engineer. The ever-increasing number of organizations is counteracting the efforts that are being made to raise standards and to place the engineer in the category of a learned professional man.

The licensing Board in New York has found that, with few exceptions, little or no recognition can be accorded applicants on the ground that they are members of a national engineering society. This is, in itself, indicative of the need for an amalgamation of national engineering groups with a view to establishing a body which, recognizing the unity of the profession, may have under its direction and within its authority chapters, sections, or other forms of society organization, composed of specialists in electrical, mechanical, sanitary, chemical and similar branches of the single profession of engineering.

The so-called Founder Societies at present offer the nucleus for a great scientific body to be given over to the promotion of science and the art of engineering in all their branches. Such an organization under the title of The American Academy of Engineering could comprehend membership from Canada and other American countries. The functions of such a body would be to continue in a co-related fashion the splendid technical endeavors of the American Society of Civil Engineers and its various offspring such as the National electrical, mechanical, chemical and mining societies.

The magnificent advances in engineering during the last half century are almost entirely attributable to the organizations above noted. That is the field in which they should continue their endeavors, leaving the professional and social activities to other groups—organized especially for such purposes—which are coming into being in the various states and which must sooner or later establish a national association or clearing house for their own field of activity. To repeat—these national societies have functioned well as scientific and technical bodies. To divert their attentions into other channels will but lessen their value in the field for which they are best suited, both by tradition and form of organization. It is hardly likely that any existing agency can function effectively in the field of scientific endeavor and social or political activity at the same time.

There are today too many engineering organizations. The New York State Society has pointed out on numerous occasions the need for a reduction in the number of such organizations. A consolidation would result in a material saving in dues to the individual while providing for the existence of a minimum number of effective and recognized societies to whose membership every engineer could aspire.

The founder societies are invited to give joint consideration to the question of amalgamating under the name of the American Academy of Engineering which, with headquarters in Washington and secretariats in required other places, would command the respect of nations. Membership in such an organization would be significant of accomplishment and the cherished ambition of every American engineer.

COMMENTS BY PAST PRESIDENT D. B. STEINMAN—N.S.P.E.

September 23, 1943

Dr. A. B. Parsons, Secretary
American Institute of Mining and Metallurgical Engineers
29 West 39th Street
New York 18, N. Y.

Dear Mr. Parsons:

"Please accept my sincere thanks for your kindness in sending me a reprint of your article 'Superorganizing Professional Engineers', also my sincere congratulations on this thoughtful and illuminating article. I am glad that you had the professional interest and the courage to write it and have it published. Except for some relatively minor differences, I am in full accord with the thoughts you have expressed. In fact some ten years ago I prepared notes on this subject together with a diagram very much like your Chart 2; but I have withheld it from publication awaiting an opportune time.

"There is one question or criticism I have with reference to the very interesting Chart 2. In the left-hand column, referring to the technical societies, you have the note 'Function: To deal, in behalf of all engineers, with technologic and professional matters'. You do not define the word 'professional' as you use it here. In the right-hand column, relating to the professional societies, you limit the function to 'political and legislative affairs'. The professional societies would not recognize this limitation, as it would appear entirely too narrow. The professional societies are also organized to handle matters in the fields of public relations, professional relations, and the preparation and qualifications of engineers. Confusion and duplication have been caused by E.C.P.D. going into this field, although it represents primarily the technical societies and has not established any liaison with the professional societies. You are entirely correct in suggesting a differentiation between the two types of organizations, but you do not appear to have drawn the proper dividing line of differentiation. Many of us have found it much simpler, clearer and more consistent, for the past twenty years, to consider the dividing line as between technical and professional activities. Without clarification on this point, much duplication and confusion would be bound to continue.

"I feel, however, that your contribution is a splendid step in the right direction, and I sincerely hope that it will receive the attention that it so generously merits. I particularly concur in the thought you emphasize that every engineer should belong to both groups of organizations, a principle that I have been preaching for many years.

"Wtih kindest regards,"

Faithfully yours,

D. B. Steinman

POST WAR EDUCATION IN A POST WAR WORLD

CONDITIONS, PROBLEMS AND PROPOSALS ORIENT THE FUTURE OF HIGHER EDUCATION PARTICULARLY THE TRAINING OF ENGINEERS

As Envisioned By
DR. EDWIN S. BURDELL — *Director*
Cooper Union for Advancement of Science and Art
(From an Address Delivered at The Wisconsin X Club Forum)

(Continued from October Issue)

The October issue contains the first portion of this article dealing with the subject of Post War Engineering Education. It is a timely discussion by an educator with imagination. The author Dr. Edwin Sharp Burdell is nationally known for his leadership in the movement to liberalize the training of engineers by broadening the engineering curriculum to include humanistic studies. At Cooper Union, where he was appointed director in 1938, his principal achievement has been the establishment of a department of humanities in the engineering school. Under Dr. Burdell's administration the educational policy of Cooper Union has been governed by the principle of scientific humanism, involving an intellectual synthesis of the natural sciences and the humanities.

I readily concede that a truly liberal education develops a critical and inquiring attitude of mind, a willingness to put one's knowledge to the test of investigation and thorough study. It is based on the confidence that the mind of man can be used in the discovery of truth; that with human reason we may go forward in our endeavor to understand ourselves and our world. But this approach to truth and ultimate values need not be exclusively through the application of deductive reasoning in the field of philosophy, religion, the languages, literature, and the fine arts. An understanding of nature and human nature can also be achieved through inductive reasoning which is characteristic of the study of mathematics, physics, biology, chemistry, and the social sciences and their application to human needs. There is no need for a Darwinian struggle for existence between the various educational fields or disciplines. Let each contribute what it can and let them be brought together in a more or less philosophical synthesis. Our efforts toward such a synthesis at The Cooper Union we like to call "Scientific-Humanism."

I feel sure that in the post-war period one perplexing college dilemma will no longer exist—the dilemma which has grooved education in science and engineering, *or* in the liberal arts. I submit that the college program of the future will embrace science, engineering, *and* the liberal arts.

I would like to take this opportunity, if I may, to point out that modern engineering education is no longer mere vocationalism. In 1940, the Society for the Promotion of Engineering Education, a national body of engineering teachers, brought forth a significant statement which defined engineering education as consisting of two stems: scientific-technological studies, and their complement, the humanistic-social studies. Under the humanistic-social stem are included the study of social and economic organization; the study and practice of oral and written expression; acquaintance with as well as enjoyment of the great masterpieces of literature and an understanding of their influence upon society, and most important, the development of moral conceptions essential to an adequate personal philosophy, to a career consistent with the public welfare and to a sound professional practice. That engineering educators are thinking through their programs to such objectives and admitting the co-equal importance of the human with the material elements of the engineering profession places the engineering schools in some respects a step ahead of the liberal arts college.

I am afraid that the elective system which frequently has permitted an incoherent and purposeless miscellany of educational effort has caused some students and their parents to lose faith in the efficacy of the liberal arts program in preparing young men and women for adequate participation in the life of the community. The current trend toward technical education may to some extent be due to a demand on the part of the present-day student for a balanced and rational educational program which includes, among other things, legitimate vocational objectives.

It is the job of the post-war engineering schools to preserve and enlarge the humanistic studies. It might be well for other professional schools, such as those of medicine, nursing, and especially business, to liberalize and humanize their courses and to safeguard themselves from accusations of crass vocationalism. On the other hand, the liberal arts colleges may need to put their house in order, and, without sacrificing the values to be derived from the purely humanistic approach, keep in sight the reasonable expectations of their graduates to be able to function successfully as members of society.

In addition to students going out into the world better prepared, the world will be brought into the hitherto

cloistered halls of the college. The many workers' education projects, of which one of the most significant has been on this campus, will be given the full and unreserved sponsorship of the educational authorities and will not be thought of as merely the expression of a militant and aggressive trade unionism. If we demand reason, balance, and a sense of proportion in the relations between labor and management, we will have to educate leaders of labor as well as leaders of management. If we have special campus courses for farmers, salesmen, and executives, why not for labor leaders? If labor leadership needs a sound training in economics, history, and public speaking, it would be better to receive it systematically in the calm atmosphere of a college lecture hall than haphazardly from the orator on the street corner. Your own great economics expert and stalwart citizen, John R. Commons, had a good phrase for this kind of practical service of the university to all groups. He called it "utilitarian idealism."

Harvard University "graduated" its first class of labor leaders last month when fourteen representatives from the American Federation of Labor and the Congress of Industrial Organizations completed a year's work designed to return them to their unions as better labor leaders. When Harvard invited the unions to join the experiment, it stipulated that the unions should select the men and asked that selections be based upon general intelligence, capacity for leadership and devotion to the labor movement. The average age was twenty-seven years. The year's college work involved substantial personal sacrifices for many of these students. It is reported that in some cases the wives went to work to put their husbands through. The men's scholastic records compared favorably with those of the "bosses'" sons.

Professor Sumner Slichter of the Harvard Business School and a native of Wisconsin who has taken keen and intelligent interest in labor problems was a moving force in setting up the Harvard labor fellowship plan He has pointed out that there are at least 100,000 trade union administrative officers in the United States and the better trained these executives are, the better it will be for both labor and management.

Although I have said that there would be an equalization of educational opportunity beyond the high school level, I do not mean to imply approval of the indiscriminate admission of all high school graduates to the colleges and universities of America. It is palpably absurd to consider all persons who are able to add up a sufficient number of high school credits as capable of assimilating higher education. Bachelor's degrees became a fetish with the American people following the first World War. It was the ambition, yes, even the demand, of every parent that his son or daughter be a college graduate, with very little consideration of the wisdom of expending the time and money needed to achieve this aim. I once taught in a middlewestern state university, which, for a decade, had an annual increase of several hundred students. The university authorities, instead of acting with educational statesmanship, and investigating the wisdom of granting admission to every high school graduate who applied, uncritically accepted the demand as an endorsement of their splendid work and planned larger and larger expansion with the result that hundreds of boys and girls, unqualified for higher education were made unhappy as they dropped out of college and went back home. The failure was not on the part of the boys and girls but on the part of the state which failed to provide them with the kind of education for which they were fitted.

Therefore, post-war education should be planned from the bottom up and as a whole. That is to say, the high schools should be regarded as an integral part of the total educational program of the community and not as an isolated teen-age experience. While high schools should be more in touch with the occupational opportunities of the community, they should not be any less concerned with good citizenship and with instilling a desire for continuing self-education later in life in the cultural fields of music, art, religion, and philosophy. The state high school system should be integrated with a publicly-supported two-year junior arts college program and a technical institute or sub-engineering program of two or more years. This should in turn be integrated with a substantial adult education program in each sizable locality, with correspondence courses under the auspices of a university extension service for those who live in small towns and rural areas. To accomplish this it might be well to consider a new grouping in which the present eleventh and twelfth grades of the senior high school would be administratively combined with the two-year junior arts college or technical institute program. An end point would be achieved which would more likely be coterminous with the academic aptitudes and capacities of the average youth. A certificate would be awarded only after rigorous achievement tests.

I hope that we have seen the end of adding up college credits for the award of certificates or degrees. The present emphasis on achievement tests by the armed forces will have a salutary effect on post-war education. Educators will gain experience and confidence in requiring evidence of actual growth in mental stature at the college and sub-college level, just as they have long been accustomed to look for such evidence in the comprehensive oral and written examinations for the master's and doctor's degrees.

I will not concede that any half-way measures will achieve this reorganization of American education. Nor can I understand such grotesque devices as granting a bachelor of arts degree at the end of two college years. Cheapening all college degrees will not bring a sensible and realistic solution of our present situation. Rather will it be a case of throwing out the baby with the bath water!

Nor would I accept a solution which is based on the conclusions that only a predetermined number of boys and girls should be admitted to each category of professional and sub-professional training. We are fighting a

world war to get rid of the notion of regimentation. I submit that no government bureau is wise enough to say how many shall be educated or for what objectives. I do say, however, that both government bureaus and private associations of educators must overhaul completely the present chaotic and muddled system which encourages false standards of educational prestige, square pegs in round holes, depletion of public and private resources through unwarranted expenditures, and over expansion of certain conventional types of educational facilities to provide the means of gratifying the national ego.

While competition among colleges and over-emphasis on varsity athletic needs to be solved by patient and sympathetic understanding among the institutions concerned, I have pointed out elsewhere that the spectacle of several tax-supported institutions in a single state competing for state funds, as well as for students, will scarcely be tolerated in the future by the over-burdened taxpayer. Duplication of facilities is defensible when it comes to research where the advantages of having several competent investigators pursuing parallel lines of study in the same field may be productive and the source of interstimulation, but it is palpably absurd to duplicate within a limited geographical area class-rooms, dormitories, and all the complex impedimenta of "service" of the modern American college.

For instance, until 1939, the five state-supported universities in Ohio went their separate ways academically and financially. Since 1939, however, there has been established under the leadership of President Bevis of the Ohio State University an Inter-University Council, an advisory and consulting body consisting of the president, one member of the board of trustees, and the business manager of each of these five institutions. This group meets several times each year to consider questions of common interest and concern, and to formulate, in the interest of efficiency and economy, a coordinated program of service, nurture, and support which will strengthen each of the five institutions within the limitations of its own best competence and reasonable public demand. Among the accomplishments of the new Inter-University Council of Ohio has been an understanding that the Ohio State University, with its existing plant, facilities, and specially trained personnel, is the logical institution among the five state universities for the development and prosecution of graduate work at the Ph.D. level, for specialized technological training, and for professional education such as law and medicine. Also a joint building program apportioned upon the basis of student population has been set up and the allocation of operating funds for the five universities has been determined. The most important aspect of this development in Ohio is that these universities, hitherto competitive in their relations with the state government, were able, through their representatives, to sit around a table and come to an amicable and united agreement upon building and operating appropriations of vital concern to each — and then to present a united appeal to the Governor and to the Legislature.

There must be, among the publicly-supported institutions, a general pooling of educational resources similar to that in Ohio which I have just cited. The time has also come when the public and private institutions in a given community must collaborate for the most advantageous uses of their plants and programs.

Finally, I want to point out the important service which I believe the Armed Forces Institute, located on a campus, can perform for post-war education. As I understand it, the Institute aims to provide each demobilized soldier with an educational competence profile which will include his full military and previous educational record and his Army classification score, all of which he may present to the institution of his choice. The admissions officer may accept these data or he may see fit to submit the candidate to special or comprehensive examinations. The increasing number of institutions which are going on record as denouncing the blanket degree custom which prevailed during and at the end of the last World War is a healthy sign. It is impossible for engineering colleges to grant such unearned degrees and liberal arts colleges should consider such misplaced acts of kindness as beneath their dignity. The soldier's war service is accepted by the nation with gratitude. I doubt if the soldier himself expects the college to be other than honest in evaluating that service from the strictly educational standpoint.

Whether or not there will be a great influx of students into the colleges, universities, and professional schools depends of course on many factors, on the attitude of youth too young to be drafted but who leave school in their early teens for the excitement and high wages of war industry, the length of the war, the opportunities for jobs after the war, on the attitudes engendered in millions of young soldiers by months or years of killing, of living dangerously and from day to day—all of these factors are most unpredictable. To assume that there will be a great hunger for mental improvement with fairly definite vocational and professional goals in view is to assume that history will repeat itself and that the "college boom" of 1919-1920 will return. I do not feel sure that that will necessarily be the case, but if it is, I am sure that existing educational facilities will be inadequate. I am, therefore, tempted to speculate on the relative roles which public and private institutions will play in the post-war era.

The future of post-war education, to my mind, rests with the state universities. In them lies the hope of the present and the future of education in America. I feel that in spite of their unwieldiness and their dependence on politically determined appropriations there is evidence of real educational statesmanship among their executives and faculties. This is not to say that the role of the privately-endowed college is over, not by any means. Its greater flexibility and its more easily controlled registration will always assure its place and function in the total scheme. However, there is no disputing that the yield of

(*Continued on Page 25*)

Submitted as:

ITEMS OF GENERAL INTEREST

STATEMENT:—The American Engineer requests the indulgence of its readers for the various errors of spelling, punctuation, phraseology and typography which appeared in the October issue. Unforeseen circumstances and delays prevented the editing of the submitted material or the reading of printed proofs.

ANNUAL MEETING N.S.P.E.

ST. LOUIS—DECEMBER 10-11

The 1943 Annual Meeting of the National Society of Professional Engineers will take place in St. Louis, Missouri, on Friday and Saturday, December 10th and 11th. The meeting will be streamlined. Only officers, directors and delegates are expected to be in attendance. However, the nature of the business to be transacted demands proper representation from each State Society. Details will be forwarded to those whose presence is required. A report of the meeting will appear in the January issue.

CONGRESS AGAIN AT WORK

Since the return of the Congress to Washington, there have been no measures of special interest to the engineering profession submitted to either House, other than H.R. 3328 introduced on September 23rd by Walter H. Judd of Minnesota. This bill deals with the retention of private engineers by government agencies and has been referred to the Committee on Public Buildings and Grounds. Certain features of the proposal are already in practice, others involve the question of ethics.

H.R. Bill 3411 introduced by Congressman Jennings Randolph of West Virginia deals with the provision of a system of airports throughout the United States. It directs the Secretary of Commerce, through the Administrator of the Civil Aeronautics Administration, to make a survey of the nation's needs.

MISSOURI COMMITTEE REPORT

Suggests Impropriety of Term Associates

Of concern to N.S.P.E. and all state societies is the question of providing organization opportunities for Engineers-in-Training serving their apprenticeship or experience period prior to admission to professional status. New York has already provided for a junior society sponsored and directed by the State Professional Society. Ohio and other states are shaping up plans. The report of the Missouri Society Rules Committee is a most careful and analytical presentation of the problem and its possible solution. It reads as follows:

"What to do about the recent graduates and other sub-professional personnel" is a question that has been before the Society for more than a year and some progress is being made in a program to assure the proper attention to those who have not quite reached professional rank.

Walter Heimbuecher, Chairman of the Committee on Rules, reported at the recent Board meeting the result of a special study by his committee. This report states that:

"At the meeting of the Executive Board May 1, Item No. 9 was referred to this Committee for a report on amendment to the Constitution providing for two grades in the Society:

"1. Member with qualifications equivalent to those required by the State registration law for registered professional engineers.

"2. Associate member for sub-professional personnel who have not had the education, training, or experience to qualify for a license from the State Board of Registration to practice as a professional engineer."

The following is presented for your consideration without specific recommendations:

The Constitution of this Society, Article 3, Section 3, provides:

"Upon the adoption of adequate registration laws by the State of Missouri, an applicant must meet the requirement of said laws and such other requirements as may be deemed advisable by the Board of Directors of the Society."

The Architects and Engineers registration law defines a professional Engineer in Section 2, Paragraph D, as follows:

"The term Professional Engineer shall mean any person who is technically and legally qualified to practice professional engineering and who is authorized under this act to engage in the practice of Professional Engineering."

Before a person can engage in the practice of professional engineering, Section II of the act sets forth the training and experience a person must have to be eligible for registration.

Since the Statute specifically defines the qualifications of a Professional Engineer and the name of the organization is "Missouri Society of Professional Engineers" the name of the Society will have to be changed if provision is made in the constitution for the admission of sub-professional personnel who cannot qualify for registration as professional engineers.

To provide for admission of this type of membership, maintaining the present name of the Society, would be in conflict with, and in violation of the provisions of the registration law.

It wll also be necessary to repeal Article 3, Section 3, quoted above.

I have discussed the above with Mr. Scott Hancock, attorney retained to amend our constitution, and he concurs with the foregoing.

Article 3, Section 1, of the Constitution would have to be amended to read as follows:

"Section 3, to be adopted in lieu of the existing Section which would have to be repealed to read as follows: 'An Auxiliary Member shall be a person engaged in sub-professional engineering work and a person whose practical experience, training, and knowledge enable him to cooperate with a professional engineer on engineering projects.' An Auxiliary Member shall be entitled to all the privileges of the Society with the exception of holding an elective office.'

You will note that the word "Associate" is not mentioned for the reason that it has always been my contention that the word "Associate" applies to a person of equal rank and ability so I am not very enthusiastic about using it for sub-professional members in our Society.

By changing the name of this Society which it is quite obvious it will be necessary to do to admit sub-professional personnel to membership, it may disqualify the Missouri Society of Professional Engineers for membership in the National Society of Professional Engineers.

Subsidiary Society for Subprofessional Personnel—New York

State Society of Professional Engineers has solved this problem quite cleverly by organizing a Society known as "New York State Society of Engineers in Training." Its membership is open to men engaged in engineering work but who are not qualified to obtain a license as a professional engineer and that they automatically cease to be members of this Society upon receipt of their license to practice professional engineering.

As this is what might be termed subsidiary organization, it is sponsored and guided by the State Society of Professional Engineers, one-fourth of the Board of Directors are registered professional engineers, an it is presumed that they act as the guiding influence in assisting the young engineers to obtain full professional status.

The constitution and by-laws of this organization were brought to the attention of the Committee only a few days ago and it has not had time to make a study of its provisions.

A sub-professional society of some sort may be the best answer to the situation here in Missouri.

Respectfully submitted,

Chairman of Rules Committee
Walter A. Heimbuecher

Members having ideas on this subject should transmit them to the President of the Missouri Society who is anxious that definite action be taken as soon as possible. (Editor).

APPROVAL VOICED

Various expressions supporting the establishment of a Public Works Secretariat have resulted from the Editorial below referred to:

35 Maiden Lane
New York 7, N. Y.
September 24, 1943

Mr. Arthur V. Sheridan, Editor
The American Engineer
Bronx County Building
Bronx, N. Y.

Dear Mr. .Sheridan:

Your editorial proposing a National Public Works Department with a Secretary in the President's Cabinet, published in this month's issue of the American Engineer, is most timely and far-reaching in consideration of post-war progress. For many years organizations and committees with which I was associated have advocated this important step. A few months ago I was invited to testify before the Senate Committee in connection with the proposed Senate Inventions bill, known as "The Science Mobilization Act", I had occasion to discuss the many advantages of such a proposed public works department. Such a department would do much to coordinate the American initiative and enterprise that have made this country great and which are winning the war. It was also pointed out that there would be greater saving in time, effort and economy if such a department now existed. The tremendous amount of lost motion and inefficiency, together with the difficulty of introducing and promoting new ideas is a sad commentary on the present war effort. The public is now becoming more "engineer minded" in appreciation of what the engineer has accomplished in this world war effort, but in order to hold the public interest and cooperation with engineers, such a National Public Works Department with politics subordinated is most essential in promoting the welfare and progress of our nation.

All engineers should be glad to cooperate.

Sincerely yours,
/s/ Maurice Deutsch

Ed. *The writer is a well known Consultant and Advisory Engineer.*

FROM AMERICAN ROAD BUILDERS ASSOCIATION

As of October 15th, the following communication was forwarded to Highway officials throughout the country:

"The President of the American Road Builders' Association has appointed a committee of county highway officials to determine the volume of needed highway work which is available on roads not included in the state and federal systems. As chairman of this committee, I am sending you herewith a questionnaire to be filled out covering the highway needs in your county. In order to insure the inclusion in this program of a sufficient amount of county work, it is necessary that we, as counties, establish through factual information, a definite volume of work which will be needed to meet traffic demands during a five-year period immediately following the war. You county highway officials are the most reliable source of information on this subject. I know that you are tired of answering questionnaires, but here is one which has a direct bearing on your future activities.

EXPLANATORY NOTES TO ACCOMPANY COUNTY SURVEY ON POSTWAR HIGHWAY PROGRAM

"The Highway Committees of Congress will start holding hearings relative to the Postwar Highway Program in the near future. The information which will be obtained from these questionnaires will be sorely needed at these hearings. In fact, this information must be furnished promptly if the counties are to occupy the place in the Post-war Program which they deserve. You are, therefore, urged to fill out this questionnaire immediately and mail it to the American Road Builders' Association, International Building, Washington 4, D. C. just as soon as possible."

This questionnaire is a part of a survey being made for the purpose of developing factual information needed to support a program of suitable and adequate financing and financial assistance.

The answers in the questionnaires are to be based on highway needs regardless of ability to finance from existing balances or current revenues. The program reported should include all projects which could be handled in approximately a five-year period after this war, or when current restrictions are lifted and provided sufficient federal and local funds are available.

In preparing this report, county roads through municipalities under 10,000 population should be included. Roads and streets in municipalities over 10,000 will be reported separately by city officials. However, in large metropolitan counties such as Cook County, Illinois or Wayne County, Michigan, the counties should include the following classes of projects which might ordinarily fall under their jurisdiction:

(a) Highways including elevated highways.
(b) Bridges.
(c) Railroad grade separations.

In reporting bridges or railroad grade separations -- bridges should be considered as structures over streams or water and railroad grade separation structures should be considered as those which eliminate railroad grade crossings. All structures such as those included in the separation of highway grades, such as interchanges, elevated highway structures, etc., should be reported as a part of the highway projects. It is understood, of course, that individual projects are not to be listed in the report, these instructions being merely for the purpose of classifying as to totals. In reporting the work estimated to be ready January 1, 1944, January 1, 1945 and January 1, 1946, it will be necessary to consider the size of the Department's engineering personnel. It is fully appreciated that an estimate of the amount of work ready January 1, 1945 and January 1, 1946 is difficult to make with any reasonable amount of accuracy. If the war should end and a large number of engineers return, the volume of work which could be turned out would be considerably greater than if the war should continue. For estimating purposes it might be well to assume that engineering personnel could be increased by fifty percent during the latter half of 1944.

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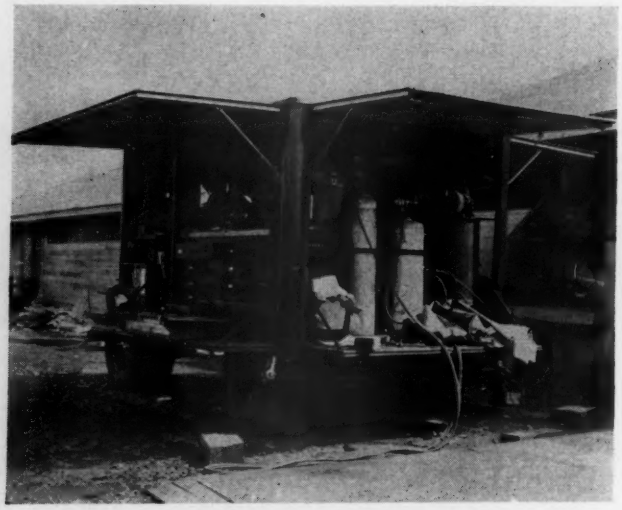


MEET "MR. FIXIT"

. . . Equipped to repair anything from mess gear to airplanes, this portable machine shop accompanies Marine Corps Engineers in the field, ready for all emergencies. Like the famous chowder of "Mrs. Murphy" the shop contains everything.

AMERICAN TANK IN JUNGLE

Concealed beneath these palm fronds is a Marine Corps lig tank. Impossible to see from a long range, it can hardly noticed from a close-up view.

THEY SERVE AS TRAFFIC COPS, TOO

such as the routing of traffic on beaches for Leatherneck raiders as well as selecting and erecting locations over the most navigable routes.

EXPERTS IN DEMOLITION

Students getting detailed advice at a Marine Corps Engineer Demolition School before being sent out to blow up enemy explosives in the field.

All photographs taken

...NE CORPS ENGINEER

...RO... PORTRAYED IN OCTOBER ISSUE

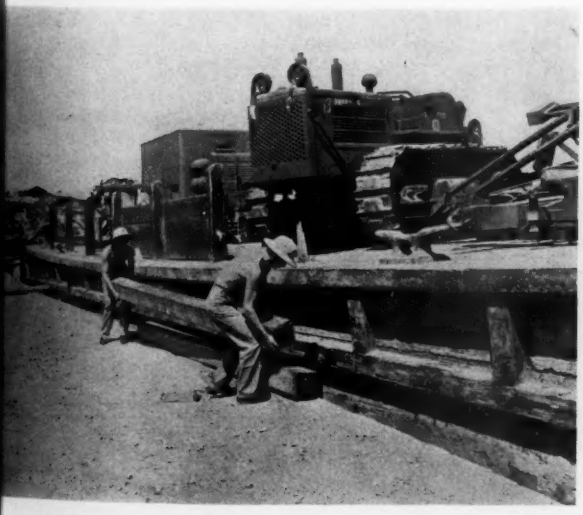
...ican ...—October 1943

...N THE SNOW OF FAR OFF NORTHERN LANDS"

...Marine Corps Engineers constructed "Nissen huts" for the shelter ...of Leathernecks on duty in Alaska. Like typical Marines, the En...gineers are equally at home amidst "tropic scenes" or "icy ...wastes."

MARINES AT HOME ON TROPICAL ISLE

These thatched huts not only provide shelter for Marines stationed in the South Pacific but they are so constructed by Marine Corps Engineers that they blend with the terrain and afford perfect camouflage.



HEAVY LABOR

...'s a real man's work that these Marine Corps Engineers perform ...nder tropic skies as they sweat and toil to keep supplies moving ...o their buddies. This is a Caribbean Port.

...Marine Corps Engineers

TEMPORARY BRIDGE

A jungle masterpiece is this bridge constructed by Marine Corps Engineers in the midst of the Guadalcanal Jungles that aided Leatherneck raiders to track down the enemy.

Fragments from

STATE & SOCIETY ACTIVITIES

MISSOURI

From the September Missouri Engineer, the following are excerpted:

Nomination Report

The Nominating Committee, consisting of E. W. Carlton, R. P. Cummins, A. H. Baum, Jr., C. M. Lytle, and W. M. Gaylord, Chairman has submitted the following report: President, Bruce Williams, Joplin; 1st Vice-President, E. R. Schultz, Cape Girardeau; 2nd Vice-President, C. G. Roush, Kansas City; 3rd Vice-President, Thomas J. Skinker, St. Louis; Sec'y-Treasurer, H. J. Bruegging, Jefferson City.

Directors-at-Large to fill vacancies caused by the termination of terms of office of Frank Beard and L. B. Rush: Albert R. Waters, Kansas City, January 1, 1944 thru December 31, 1948; R. E. Riddle, St. Joseph, January 1, 1944 thru December 31, 1946.

If E. R. Schultz is elected First Vice-President, he will have to be replaced on the Board by a nomination and, in this case, the Nominating Committee would like to recommend that Mr. L. A. Weeks of Springfield be nominated to fill this vacancy.

The above nominations were made in such a manner as to distribute the offices and members of the Board throughout the State as much as possible. Also, the committee endeavored to have representatives of the various branches of engineering in office next year.

We believe that the nominations as submitted will be representative of the entire State and most branches of the profession, and believe that every man nominated has the welfare of our organization at heart and will serve faithfully and well.

Section 2, Article XI, of the Constitution provides that "A candidate may be nominated and placed on the ballot upon the written petition signed by thirty members in good standing and presented to the secretary-treasurer at least four weeks prior to the date of the Annual meeting. Not more than ten of the petitioners shall be members of one local chapter."

Executive Board and Directors Meet

A combination of reawakening interest, fortunate scheduling, and a slight decline of construction activity made it possible for the Executive Board and Directors to have, on September 12, one of the best attended meetings, since Pearl Harbor.

The group gathered at the Missouri Hotel in Jefferson City at 10:30 A.M. and continued in session until 7:00 P.M. with only a brief time-out for lunch. The agenda prepared by President Owens represented problems of both serious and routine nature and required intense effort to complete in the time available.

Some of the items of discussion were of a nature that required further executive action and no report can be given until such action has been completed. Among the items on which action was taken, however, was the correspondence with the Registration Board concerning the vacancy of the position of executive-secretary. The chairman of the Registration Board advised that since the vacancy was due to the incumbent's military service the position would have to be held for him until he returns and that it would be impractical, if not impossible, to find a suitable candidate for a temporary appointment. In view of this situation, the Registration Board had arranged to have at least one engineer member on duty in the office one day a week. This arrangement seemed to be a practical answer to the problem and the Officers of MSPE authorized the President to advise the Registration Board to that effect.

President Owens reported that he had received replies from most of the Missouri Congressmen regarding the Science Mobilization Act and that these replies had all assured opposition to the bill. E. B. Black, past president, reported that the bill had been opposed by the Army and Navy and that passage during the present session was improbable. He advised further that the bill was liable to reappear and the board accepted his suggestion that continued vigilance be kept on this type of legislation.

H. J. Bruegging, secretary-treasurer, reported that collection of dues, especially from the chapters, was lagging and seriously hampering the activity of the Society. Also, he reported that this was the first year in the history of the organization that the membership failed to gain. This was due, in part, he suggested to the fact that the engineers of the state have been too busy with war work to further Society growth and that a large number of active members had entered military service and been assigned to foreign areas where contact was impossible.

C. G. Roush, Chairman of the Committee on Membership, reported that his duties had prevented active participation in the campaign to enlist members but promised that some work would be done in the near future.

A previous action of the Executive Board concerning dues of members in the armed services was clarified to provide that all such members would have their dues rescinded for the duration. The secretary-treasurer was instructed to issue membership cards to all members in the armed service upon receipt of advice from accepted sources that the members are serving their country.

The annual meeting will be held in Jefferson City, October 29, 30, 31, with the Jefferson City Engineers Club acting as hosts. Tentative plans include a joint meeting with the Missouri Association of Architects. The principal feature of the meeting will be an address by Harry E. Nold, Columbus, Ohio, Vice-President, and Edward Larson, Washington, D. C., Executive Secretary of N.S.P.E. A complete program will be presented in the October issue of the Engineer.

A. H. Baum, National Director, reported that the National Society of Professional Engineers will hold its annual meeting in St. Louis, December 10, and 11. The officers and members of MSPE have been invited to attend and take part in this meeting.

W. H. McDill, Editor of the Missouri Engineer reported on his work and requested a change in policy that would reduce the amount of work attached to the publication. The Board authorized that the publication be made a bi-monthly issue. This policy will probably not go into effect until after the annual meeting or with the January issue.

E. C. L. Wagner, representing the Citizens' Post-War Construction Council, appeared before the Board and explained the policies and purposes of the council and the part that the MSPE as an organization and its membership individually would do in assisting the Council. The Board approved the work of the Council and assured its cooperation.

Those present at the meeting included: C. P. Owens, president; Bruce Williams, 2nd vice-president; C. G. Roush, 3rd vice-president; H. J. Bruegging, secretary-treasurer; E. B. Black, past president; A. H. Baum, past president; L. B. Rush, director; L. A. Pettus, director; O. D. Chrisman, director; H. L. Ferguson, Jefferson City chapter; R. Y. Jones, Southwest chapter; E. I. Myers, Western chapter; W. B. Roush, Northwest chapter; R. P. Cummins, Ethics and Practice; C. G. Roush, Membership; W. A. Heimbuecher, Rules; and W. H. McDill, Editor, Missouri Engineer.

NEW JERSEY

Board of Trustees Meets

Through the courtesy of Secretary Braun of the New Jersey Society the following excerpts from the Minutes of the September Meeting of the Board of Trustees, held on the 17th at the Newark Athletic Club, are made possible of reproduction: To quote—

"The business session was convened at 8:30 P.M. by President Krueger. The following were present: Engineers Anderson, Bickford, Christy, Clarke, Hamilton, Harley, Jones, Kissam, Kramer, Leake, Loede, Matte, McKee, Szabo, President Krueger and your Secretary.

President Krueger gave a fighting talk about getting in 100% renewals of our 1942 members and an additional 50% of that figure in new members. 750 members were set as our minimum goal for 1943. The fundamentals of salesmanship should be used in creating the desire to join our Society. A special effort should be made to get newly registered men to join and become active in our work. With proper guidance, these men will welcome the opportunity of becoming actively affiliated with the only Society in New Jersey which fully represents the registered professional engineer and land surveyor from the local Chapter, through our State Society and on to our National Society. President Krueger reported that Middlesex and Union Chapters will reorganize very soon.

President Krueger reported for the New Jersey Engineer as follows: Since the advertising campaign started last April, 107 ads worth $3475.00 have been secured. These ads remain the same for four issues. Our July issue started with 32 pages, the October issue will have 48 pages and will feature the Fifth Annual Land Surveyors Conference, more about which will be shown later. All of the Chapters cooperated in securing the ads. Hudson far outdistanced the field by getting three times its quota. Essex Chapter just made its quota, while the other Chapters fell short of quota. Plans are now in the making for the 1944 advertising campaign in which all Chapters will have a larger part.

President Krueger asked each one for constructive criticism of the July issue of the New Jersey Engineer. Considerable time was devoted to this subject and the President was almost snowed under by the barrage of criticisms levelled at him. The October issue will reflect these changes insofar as possible.

Chairman Harley of the Land Surveyors Committee reported that his Committee will meet September 25th at which time details of the Conference scheduled for October 16 at Rutgers will be completed. Acceptances are now being received and complete details of the Conference will be announced after the September 25th meeting. (The October issue of the New Jersey Engineer will carry complete details of this, the Fifth Annual Land Surveyors Conference sponsored by our Society in the interest of the Land Surveyors of New Jersey and vicinity.)

Names of alleged violators reported by President Krueger have been referred to the Essex Chapter Ethics Committee for investigation. A number of cases in Hudson County have been checked with our State Registration Board and practically all have been closed.

The Resolution of the Mercer Chapter to the effect that the NJ Civil Service Commission was not complying with the State Law in fixing qualifications for engineering positions has been discussed by President Krueger, Vice President Stickel and Chairman Christy. Engineer Stickel is now handling the case.

The matter of a survey being made in Monmouth County by Land Surveyors not licensed in New Jersey was investigated by Engineer Dequine of this Committee. He reported that the Monmouth Ocean Chapter had already looked into this situation and learned that some of these men are registered in New Jersey and that others not registered here have made application to do so. Engineer Dequine reports further that 'all men in responsible charge of this work are properly licensed as are all top executives.' A report of the Public Relations Committee was submitted as follows:

The main activity during the summer was the development of a program covering an essay competition in the high schools of New Jersey on post war planning in the name of the New Jersey Society of Professional Engineers.

It became obvious at the start that in order to realize the desired publicity and to conduct a successful competition throughout the State, it would be necessary to interest all state groups directly connected with post war planning, various state organizations engaged in civic and educational problems and state education authorities. This has been effected with the aid of Professor Kissam of Princeton.

A Synopsis of the Contest follows:

Subject—A statewide essay competition open to high schools of New Jersey on post war planning.

Purpose—To stimulate interest in the acquisition of knowledge concerning post war planning. Students will probably depend on their parents, friends and teachers. The outcome of the studies will lead these citizens toward a clearer understanding of the problems involved.

Although a program of this nature may not produce practical results, it is expected that the general public will at least give thought to the fundamentals and vote intelligently on similar projects. Moreover, the publicity derived through the competition may bring to light the present failures to integrate post war planning for the benefit of the entire community and for all citizens regardless of economic or social standing.

Awards—The awards donated by our Society will consist of war bonds, total value of $100.00. In order to stimulate interest in each high school an award of $10.00 contributed locally could be given to the writer of the essay selected in each high school. Further awards may be given if the local committees prefer.

President Krueger has appointed the following Nominating Committee for 1943: Engineer Jacobs (Chairman), Weeks, Hamilton, Taylor and Wise.

Hudson Chapter will be host at the 1944 Convention of the Society scheduled for January 29, 1944 at the Hotel Plaza, Jersey City. Engr. Richard L. Higgins was appointed Convention Chairman.

South Jersey Chapter

An interesting meeting was scheduuled for September 23rd. The American Engineer would appreciate a report of meetings, rather than an announcement of scheduled events unless made available a month in advance.

NEW YORK

Erie Chapter

Secretary J. J. Landers advises that "The Erie County Chapter met jointly with the Engineering Foundation of Buffalo on Tuesday, September 21st, at The Hotel Statler, Buffalo, for a meeting devoted to the "Big Inch Oil Line." The meeting was attended by 500 Engineers. Louis Sattele, Superintendent of National Tube Co., explained in his slide-illustrated talk the manufacture of the 24" seamless tube used in this great engineering project, which will handle 300,000 barrels of oil per day. A colored talking picture entitled "Oil For War" was also presented which showed the details of installation. (Ed. October news not received 10/20/22.)

Nassau Chapter

Publishes Bulletin

The Editor is pleased to hear from Nassau Chapter and to receive the attractive roster which it has just issued.

In its Foreword the Roster Bulletin states: "The New York State Society of Professional Engineers, Inc., was organized in 1926. The earnestness of the founders was attested by their personal contributions of thousands of dollars, in addition to their unsparing energies and devoted services, to carry the organization forward. From this beginning there has grown an established and successful State Society with 2800 enrolled members in 23 active Chapters embracing 35 Counties containing 85 per cent of the entire population of the State.

In 1934, the New York State Society took the initiative in bringing together the four State Societies then established to

form the National Society of Professional Engineers. The National Society has extended the organization of State Societies and now has 23 Member State Societies extending from coast to coast and from the Great Lakes to the Mexican border. With the new impetus given to the Registration movement by the National Society, Engineers' Registration Laws have now been extended to 38 states.

Membership in the State and National Societies is secured through enrolling in the County Chapters."

The Chapter objectives are stated as follows:

Objects

This organization is concerned with the Public Welfare of the State of New York, particularly with that of Nassau County, and as such welfare is largely dependent upon engineering projects, the proper prosecution of which must safeguard life, health and property, it therefore purposes to use its powers:

Sec. 1. To aid in the formulation, modification and enforcement of laws restricting the practice of Engineering and Land Surveying to properly qualified persons duly licensed by the State of New York.

Sec. 2. To elevate the professional status of the Engineering Profession by better acquainting the public with the functions and accomplishments of Professional Engineers and Land Surveyors.

Sec. 3. To promote and encourage honorable procedure towards emoluments commensurate with the dignity and responsibility of the Engineering Profession.

Steuben Chapter

Issues News-Letter

"This is a News-Letter. We have been talking about starting for quite a while but we never seemed to get under way. The State Society has been urging us (along with all the other chapters) to send out these News-Letters for the benefit of the members of our society who are not able to attend many of our meetings. Some of the news will be furnished us by the State Society, but most of it will be from our own chapter. The success of these News-Letters will therefore depend on how much news is sent in by our own members—so let's hear from you members, those at home, those in the armed services, those on construction jobs, and any who may have news that may interest the others members of one chapter.

This year the State Society has arranged to hold its Fall Meeting in Binghamton on Oct. 29 and 30. This will give many of us an opportunity to attend a State Society meeting and I wish to urge all of our members who have never attended a State Society meeting not to miss this opportunity. Those of us who have attended State Society meetings in the past will need no urging. Herman F. Brumm of our own chapter has been appointed one of five members of the Resolution Committee for this meeting.

At our June meeting in Corning we invited all engineers in the vicinity to attend. Everyone thought it was a good idea and we may try it again this winter. At the business meeting we decided to buy one of the Directories of the 70,000 registered engineers in the U.S. in the name of the chapter. This has been ordered but has not arrived yet. It will be available to all members of the chapter who may wish to use it.

Attention is called to the fact that November 1 is the deadline for getting in applications for the January examinations for the Professional Engineers license. Also December 1 is the deadline for the application for Engineers-in-Training examination in January. Those of you who are acquainted with any young engineering graduates may wish to pass this information along to them. I have a supply of application blanks and instructions and requirements for both groups which are available on request.

Now for some limited news of our members:

Capt. D. J. Carr has been transferred from Minneapolis back to Frankfort Arsenal in Philadelphia.

Lieut. Richard C. Ward is in Louisiana with a Petroleum Distribution Unit. (Let's hope he can distribute some in this direction).

Walter E. Smith is back in Corning again and has been made Assistant Manager of the Pressware Division of the Corning Glass Works.

Two of our Associates: Joseph J. Brezina and Albert D. Tuttle are in the U. S. Naval Reserve. Incidentally, Tuttle received his Professional Engineers License as a result of the examination which he took in January and we hope he will soon become a member of our society.

Another of our Associates—Adser B. Schwenneson was in England taking advanced training with the Signal Corps the last we heard.

Members Barton S. Bascome, William Phillips, and G. St. John Wood are all in Washington, D. C.

Don't let Ohio "Beat New York" in '43."

Stanley Fairman, Sec. & Treasurer

Tri-County Chapter

According to the Tri-County News the September meeting was held on the 23rd at Fitzgerald's Hotel in Glens Falls, in the same private dining room in which five years ago, plus one day, the organization of this Chapter was effected and a charter application formulated.

An innovation in program was tried by which the meeting was 'time tabled' for a social hour for renewing old acquaintances and acquiring new ones at 6:30, the dinner called at 7:30, and the business part of the meeting at 8:30. The idea seemed to meet with approval for all who were at the business meeting were 'present and accounted for' at 6:30.

The President announced that the recently revised Constitution, By-Laws and Code of Ethics had received the approval of the Executive Committee of the State Society, and then distributed copies to all of the members present, also announcing that copies would be mailed to those members who were not present. A vote of thanks was recorded for the committee for the task so well done and for the excellence of the results.

Following the business part of the meeting, Vice-President Clarence W. Post addressed the meeting on the subject of members and membership, prefacing his remarks with a brief outline of the history of the State Society, its objects, its accomplishments and its aims to attain an integrated organization of all who follow the calling of Professional Engineer, in whatsoever field, as an effective power in raising and maintaining his profession in its proper place in world economy.

The Next Meeting

Will be held on Thursday evening, October 21st at The Wishing Well, on the Saratoga-Glens Falls Road. Social hour at 6:30; dinner (of your choice) at 7:30; business meeting at 8:30.

The members of the Executive Board are requested to assemble for a short meeting at 7:45 to consider two important matters of business.

We cannot announce the name of the one who will be our speaker, at this time, but you will read all about it in the newspapers and in the notices that will be sent to all members and invited guests with the return postal cards.

Westchester County

September Board and Chapter Meeting

From Secretary Wenzel comes the following report of the September meeting. News of October is being awaited with interest.

A combined Board of Directors and Chapter membership meeting of the Westchester County Chapter was held September 14, 1943 in White Plains, New York. President A. M. Anderson called the meeting to order. Directors in attendance were Anderson, Brady, Brienza, Harding, Krey, Macbeth, Van Tassel, Vogel and Wenzel.

A letter was read from State Society Public Relations Chairman G. J. Nicastro regarding the advisability of sending copies of our Chapter bulletins to other Chapters. The secretary was instructed to mail bulletins accordingly.

Committee Reports

Ethics and Practice Committee: Engr. G. T. Macbeth reported on the New York City Housing Authority action as outlined previously.

Legislative Committee: Engr. V. Terenzio reported on the Kilgore Bill S-702. This bill purports to effectuate the maximum utilization of our scientific and technical resources, facilities and personnel by establishing an office of Scientific and Technical Mobilization, etc. The bill is very broad in its readings and grants to the President, Congress and all Federal, State and local government agencies vast power and would tend to place the private business and engineering services in competition with the government. It would give complete scientific and engineering services in competition with the professional engineers.

A motion was made and carried that the bill be referred to the committee for recommendation and action, and to report back at the next meeting.

Membership Committee: Engineer F. Keaveny reported on activities of the membership committee and requested that extra copies of monthly bulletins be mailed to him. Secretary was instructed to mail extra copies to Engr. Keaveny.

Program Committee: Engr. J. H. Taylor reported that the program committee was somewhat hesitant in obtaining a program due to conditions of gas rationing and location for a suitable meeting place.

Next Meeting: A motion was made and carried that the next meeting be held in White Plains October 19th, and that Engr. J. H. Taylor announce the place and program.

New Constitution: Our new constitution does not include an article on Engineers-in-Training. A motion was made and carried that the membership be circularized in the next bulletin at the bottom of the sheet, with an enclosed envelope, to amend the Constitution to include Engineers-in-Training.

Classification of Professional Personnel by the Federal Government: Engr. Van Tassel reported that this is identical with the Kilgore Bill. A motion was made and carried that the committee be discharged.

OHIO

President's October Letter

Fellow Member of O.S.P.E.

Engineer's Registration in Ohio celebrated its Tenth Birthday last month. In my opinion no professional movement in the history of our State ever made such progress as has been enjoyed by that of the Engineers.

We can view with pride the fact that, at every session of the Ohio General Assembly since that time, our law has been given added strength and every decision of the Courts and opinion of the State Attorney General have upheld our contentions. We now boast of having the second largest roster of Registered Professional Engineers and Surveyors in the Nation and our society is the second largest State Society in the National Society of Professional Engineers. Yet some of the Engineers of our state ask "What is the value of O.S.P.E.?" For those men I want to quote from the Journal of The American Association, one of our oldest professions.

> "If there is such a thing as a profession as a concept distinct from a vocation, it must consist in the ideals which its members maintain, the dignity of character which they bring to the performance of their duties, and the austerity of the self imposed ethical standards. To constitute a true profession, there must be ethical traditions so potent as to bring into conformity members whose personal standards of conduct are at a lower level, and to have an elevating and ennobling effect on those members. A profession cannot be created by resolution or become such overnight. It requires many years for its development, and they must be years of self-denial, years when success by base means is scorned, years when no results bring honor except those free from taint of unworthy methods."

I trust no members of O.S.P.E. has any doubt as to the value of our organization.

Sincerely yours,
/s/ Walter W. Graf
President

October Bulletin Items

Editorial of Executive Secretary

The season of increased chapter activity is here—witness the many wonderful reports coming to the Executive Secretary's Office. Norbert R. Patton, secretary of the Cincinnati Chapter said "the best way to get new members is to have good meetings." By that criterion we should have more members next month. Our membership now stands at 1904. New York, We're Gaining Momentum!!

Some members wonder why I stress membership so much. Allow me to give reasons for doing so. First of all grant me one premise; we are trying to build a truly great profession. Membership is then necessary from several standpoints. First of all not only the leaders (that is the members of the Professional Society) but the whole professional group must become professionally minded as well as professionally conscious. In the second place our increase in membership is a thermometer of how much you are getting out of your membership. In other words are your Local, State, and National officers on the right track. If we are, you will think it so much worth while to belong that you will go out and get new members because you will feel that They Need Us.

Board of Directors Notes

Presidents, Secretaries, and other officers of the 27 local chapters were sent special invitations to the Board of Trustees Meeting. It is held the first Friday of every month at 6:30 P.M. Anyone else is welcome. Just be sure to let us know ahead of time. Forty-one plates were served at the October 1 meeting. Treasurer Shank reported an operating deficit of $112.09 this month. Total financial assets are $5640.53.

Prexy Graf read a letter from the Minnesota State Association of P.E. requesting six copies of the Salary Survey of Engineers in Public Employment.

Past President Kennedy; chairman of Chapter Relations, reported a rapidly growing chapter in Chillicothe and an excellent meeting of the Lake Erie Chapter at Vermilion which he attended.

To make the recent amendments to the By-Laws of the O.S.P.E. strictly constitutional they had to be reconsidered at a "meeting called for that purpose." They now read: Article 1, Section 11—New or reinstated members joining the Society during the second quarter of any year shall be assessed ¾ of the annual dues for that year. New or reinstated members joining the Society during the third quarter of any year shall be assessed ½ of the annual dues for that year. New or reinstated members joining the Society during the fourth quarter of any year shall be assessed ¼ of the annual dues for that year.

Article 2—(Second sentence)—The executive committee shall consist of the president, two vice presidents, secretary, treasurer, immediate past president and The Director To The National Society.

Charles H. Fritchie, Trustee from Canton Regional, one of the faces never missing from a Board of Trustees Meeting was elected Secretary of the Ohio Society to fill the unexpired term of H. N. Morris who resigned to go with the Seabees.

1944 *Convention Will Be In Columbus*

Past President J. S. Kennedy was elected National Society Director from Ohio to take the place of Director Nold upon his election to the National Presidency. No doubt Engineer Jack will keep the Ohio Society in its present position of high respect and esteem in the National picture.

Reinstated Members (as interpreted by the Executive Committee)

Since the constitution under which we are now operating was adopted January 1, 1941, Article 1, Section 9 of the By-Laws of said constitution will not be considered binding on past members who paid their dues for the last time for a year or years preceding 1941. This means that all such past members come into reaffiliation with the Society in the future as reinstated members of the O.S.P.E. but will be treated as new members with regard to the payment of dues.

Do You Know

There are 650 past members of the O.S.P.E. (1935 to 1940 inclusive). How about getting these fellows started again. Tell

them that ¼ of a year's dues will put them in good standing again, right now in 1943.

Chapter Secretaries Trek

In order to get better acquainted with one another and their tasks the Executive Secretary invited the local chapter Secretaries to Columbus for the Board of Trustees Meeting, October 1. The discussion centered around the important duties of the Chapter Secretary—such as the collection of dues and the increasing of the chapter value to its membership. Those present were N. R. Patton of Cincinnati, J. M. Heffelfinger of Cleveland, J. D. Coleman of Dayton, B. V. Wright of Hocking Valley, R. A. Pochel of Miami, M. P. Lichtenwalter of North Central, E. H. Hoffman of Ohio Northern, and R. W. Painter of Zanesville.

Marion Chapter Appeal

The State of Ohio has passed a law declaring Engineering a Profession.

This calls for Professional responsibility.

This can not be attained except by democratic processes.

You as an Engineer *must* take part.

The Society of Professional Engineers here gives you the medium through which to discharge your obligation.

Will you accept the responsibility and take part? The Society needs you! MEMBERSHIP COMMITTEE

PENNSYLVANIA

Harrisburg Chapter

The September number of Sparks arrived too late for use in connection with the October issue of The American Engineer. One learns that:

A report was made by President Snyder upon a meeting between members of the State Committee on Compensation, and Fees, architects and state officials concerning mutually acceptable and equitable fees for state work.

Those present visited and were instructively entertained at the training school of the Pennsylvania State Police. Demonstrations of methods of combating assaults by gun, knife and strangulation were presented. Following the entertainment in the gymnasium, an exhibition was given of the training given police dogs and the evening concluded with a lecture at the State Police Museum upon notable criminal cases.

Executive Secretary Conrad, on September 1, 1943, released a sheet "News and Comments from Headquarters Office." The paper was interesting and should be continued in order that members of the local chapters may be a knowledge of what is transpiring in an engineering way in other portions of the Commonwealth.

FROM THE OCTOBER NUMBER OF SPARKS, the following is excerpted:

The Membership Committee is actively engaged in preparing lists of professional engineers in this district with a view toward contacting registered men, not members of our association, during the forthcoming months.

The names of three engineers from the Philadelphia district had been submitted by the state society as nominees for a member of the Engineers State Registration Board. The subject of the Post-War Planning Commission had been personally discussed by members of the Society with Governor Martin. A joint conference between representatives of the Architects and Engineers has been arranged with the Department of Property and Supplies of the state for the purpose of agreeing upon fees and compensation in connection with the employment of such professional men by the Commonwealth.

OUR ARMY, OUR NAVY, AND OUR MARINES

(Sour grapes from one on the outside looking on, at and in)

There is a great deal of tragedy, pain and grief to war. Our sons, nephews and neighbors have been and are being killed and maimed in increasing numbers. The men who come back are often broken and loathe to tell of their feeling as they face certain death. Yes, war will always be hell, perhaps more for those left behind than those who are facing death.

On the other hand, there is that glorious band of opportunists wearing the uniforms of war who have not yet faced death for their country—or perhaps know full well that the worst hazard they will have to face are the frowns of the hostesses at a U.S.O. dance. They bask in the reflected glory of the deeds of their brethren.

While we concede that the boys down in Washington make the rules and we *know* that the military likes to run its own business, its would certainly be helpful to the uniform conscious unattached females, and to a certain extent to the undesired oldsters, if those who have really been under fire on foreign shores were to be outfitted in a distinctive uniform, so that we could reserve some of our hero worship for those entitled to it.

For this suggestion we seek no compensation, but merely ask that should *we* ultimately secure a uniform, you forget the whole damned thing!

TEXAS

Registration Board Meets

Through the collaboration of Secretary Carl Svensen and the State Board of Registration, The American Engineer is kept advised of the activities of the Board. Early in October came the following report of the Fall Meeting of the said Board together with a copy of its Annual Report to the Governor. Both follow the 1943 roster of the Board:

Business Address of the Secretary is

The Board Office in Austin
State Board of Registration For Professional Engineers
Board Office, 511 Ewell Nalle Building
Telephone 2-9942 Austin, Texas

J. B. Thomas, Forth Worth, Chairman
E. W. Pittman, Beaumont, Vice-Chairman
Datus E. Proper, San Antonio, Member
J. S. Hudnall, Tyler, Member
A. F. Mitchell, Corsicana, Member
Carl L. Svenson, Lubbock, Member-Secy.

Regular Fall Meeting Of The Texas State Board

Quoted from Report of Carl L. Svensen, Secretary

The Board held its regular Fall Meeting at the Board Offices, 511 Ewell Nalle Building, Austin, Texas, on September 23, 24 and 25, 1943.

While the Board was in session its was a source of great pleasure and satisfaction to learn of the reappointment by Governor Stevenson of Mr. J. S. Hudnall and Mr. Datus E. Proper. The Board is extremely gratified to have the continued services of these two valuable Board Members.

Officers elected for the year 1943-1944 were—Mr. J. B. Thomas, Chairman, Mr. E. W. Pittman, Vice-Chairman, and Mr. Carl L. Svensen, Secretary.

A large amount of business accumulated through the summer months was transacted including the inspection of applications, requests for reconsideration and changes of branch classification.

Oral examinations of five applicants were held on September 23rd. On September 24th, eleven applicants were examined in the Fundamentals common to all engineering and on September 25th seven applicants took the professional part of the examination.

During the meeting 43 applicants were voted registration as listed the end of this article.

A twenty-four page pamphlet of information on Professional Engineering Registration has been printed and is available from the offices of the Board.

The Board will be represented at the Annual Meeting of the National Council of State Boards of Engineering Examiners at Indianapolis, Indiana on October 25 and 26, by several Members of the Board. Forty-seven states now have engineering registration laws and a law is pending in the District of Columbia.

The Sixth Annual Report to Governor Stevenson which follows contains information on the activities of the Board from September 1, 1942 to August 31, 1943 follows in part:

Sixth Annual Report To The Governor

For the Period September 1, 1942—*August* 31, 1943

During the year the Board held seven meetings, two regular and five called, both of the regular meetings being of three days duration. One meeting was held in Houston, all other meetings were held in Austin.

Applications for registration to practice professional engineering in the State of Texas accepted by the Board during the year numbered 168 bringing the total for the life of the Board 6384.

The Board since its last report to you has passed on 238 applications of which 208 were voted registration, 12 were rejected and 18 granted permission to take 12b examination.

Of those passed to registration 147 were under the provisions of Section 12a of the Engineering Registration Act, 11 under 12b, 26 under 12c, 1 under 18 (on reconsideration), and 23 under Section 21 (by reciprocity).

During the year the Board gave oral and written examinations to 32 applicants for registration under Section 12b, of whom 12 were passed to registration and 20 failed to pass the examinations. Of the 30 who failed, 17 did not receive a passing grade in fundamentals, and 3 will be required to pass the professional part of the examination in order to complete registration. The Board is constantly seeking to improve the examination procedure by the study of results achieved and by comparison with the examinations as given by other Boards throughout the United States. In this the Board is fortunate, as the Secretary is Chairman of the Committee on Written Examinations of the National Council of State Boards of Engineering Examiners, and has had the opportunity to review the examinations given by most of the states.

During the year the Board acted on 8 requests for reconsideration from section; voted to change the section on 7 and to make no change on 1. It reconsidered requests for reconsideration on - rejected applications; voted 7 to registration, granted registration under Section 12b subject to passing of the required examinations to 1, and voted to make no change in its earlier findings in 4 cases. The Board reconsidered 13 requests for change in branch, granted 9 changes and voted to make no change on 4.

Personal appearances before the Board were had by 38 applicants, each of which hearings was of approximately thirty minutes duration.

Reports were received by the Board during the year of the deaths of 25 registered professional engineers.

Before the Board for action at at this time are a total of 71 applications of which 27 are incomplete as to reference letters, 24 are in the 12b (examination) file, and 20 are ready for final inspection by the Board.

Since professional engineering registration was legalized in Texas January 1, 1938, the Board has passed on a total of 6313 applications, of which 5509 were passed to registration and 804 were rejected. Of those who were passed to registration 32 have reregistered under a section other than that of their original registration. Of the total of 5509 voted registration 2884 have been passed to registration under Section 12a of the Act (graduate engineers), 104 under Section 12b (in which section the passing of written examinations is required), 992 under Section 12c (long experience and responsible charge of important engineering work and under which applications could be received by the Board for five years only after the passage of the Act), 1280 under Section 18 (under which applications could be received by the Board for one year only after passage of the Act), and 249 under Section 21 (reciprocity from other states or the National Bureau of Engineering Registration).

At its regular meeting of September 17, 1942, officers elected to serve the Board for the ensuing year, and they have so served, were Chairman, A. F. Mitchell of Corsicana, Vice-Chairman, J. B. Thomas of Fort Worth, and Secretary, Carl L. Svensen of Lubbock. Other members of the Board who served throughout the year are J. S. Hudnall of Tyler, E. W. Pittman of Beaumont, and Datus E. Proper of San Antonio.

WASHINGTON

Society Schedules

The Washington Society of Professional Engineers has recently released a schedule of Minimum Engineering Fees and Salaries. The form of the booklet is worth recommending to other Societies which have schedules in mind. The material is likewise worth careful perusal by all engineers as well as state societies.

Following are excerpts:

MINIMUM FEES

Foreword

To satisfy the requests for and realizing the necessity of having established and recognized standards of engineering practice, The Washington Society of Professional Engineers has adopted a minimum fee schedule for professional engineering, and a standard form of agreement between the engineers and the client, for the guidance of its members and the benefit of the Engineering Profession as a whole.

The fee schedules represent the minimum charges that are compatible with engineering service of the proper quality and scope, and is in harmony with the schedules adopted and in force in other State Engineering Societies.

The form of agreement is intended to protect the interests of both contractual parties, and is readily adaptable to a particular service or local condition, and is in general use in other States.

Acknowledgement

In preparing the Schedule of Fees for Professional Engineers in the State of Washington, data from several sources have been studied. The 1941 Schedule of Fees adopted by the Ohio Society of Professional Engineers, resulting from a six-year study from that Society and the 1942 Schedule of Fees adopted by the Texas Society of Professional Engineers have been used as guides. These studies were initiated in 1938 by Mt. Vernon Chapter, and finally completed in 1943 by Spokane Chapter, Washington Society of Professional Engineers, reviewed by the Board of Directors and adopted.

MINIMUM SALARIES

Acknowledgement

In preparing the within Schedule of Salaries and Fees for Professional Engineers in the State of Washington, data from several sources have been studied. The Federal Civil Service Classification and the 1941 "Schedule of Minimum Engineering Fees and Salaries" prepared by the Ohio Society of Professional Engineers and the "Schedule of Salaries for Professional Engineering in Texas" afforded much useful information.

Foreword

Professional engineering pioneers all major developments of modern civilization. During abnormal periods of national or community development, engineering services at times are at a premium for short periods of time. The engineer employed under these conditions must realize that such expanded remuneration cannot be expected under normal and more permanent conditions.

The schedule of salaries for professional engineers and their engineering assistants as presented herein is predicated upon permanent employment which is here defined as continuous employment for twelve (12) months or longer. It is intended also that a salary normal to a given location will be supplemented by allowances that will compensate for travel and similar expense occasioned by service at other than the home location.

When it is necessary to move the official headquarters or home of a professional engineer for the benefit of his employer, the expense necessary for moving the professional engineer's household goods and personal effects, not exceeding 7000 pounds, should be paid by the employer, in addition to the individual's travel and subsistance expense. The travel and shipping route should be the most direct route taken by recognized common carriers.

In the application of these schedules the salaries should be based upon the type of work performed and the responsibilities assumed. The classification of any individual does not imply that the individual is unqualified to assume the responsibilities and duties of any higher grade; neither should mere length of service

be regarded as the sole basis for the determination of grade and salary.

MINIMUM FEES FOR GENERAL ENGINEERING SERVICES

Division A

The following schedule of basic minimum fees shall apply to general engineering services throughout the State of Washington.

1. Cost of Construction

		Basic Minimum Fees'(%)
Less than $	10,000	10.0 plus *or per diem*
10,000 to	25,000	8.5
25,000 to	50.000	7.5
50,000 to	'100,000	7.0
100,000 to	250,000	6.5
250,000 to	500,000	6.0
500,000 to	750,000	5.5
750,000 to	1,000,000	5.25
1,000,000 to	10,000,000	5.0
Over	10,000,000	4.5

2. The distribution or "break down" of the above schedule as applying to the various percentages for the different cost classifications shall be as follows: (All in percentages of the total feees.)

Preliminary Estimates and Preliminary Reports	5% to 10%
Detailed Plans and Specifications	55% to 60%
General Supervision	35%
Basic Minimum Fee	100%

MINIMUM SCHEDULE OF SALARIES FOR PROFESSIONAL ENGINEERING IN THE STATE OF WASHINGTON

The salaries as prescribed are established as proper for engineers within the State of Washington, the range in salary being sufficient to embrace differences in cost of living as well as differences in magnitude or importance of work, and the qualifications of the individual as graded herein.

Minimum salaries shall be at or within the rates for the several grades of employment, as follows:

Sub-Professional

Grade 1	$1,200 to $1,500
Grade 2	1,500 to 1,800
Grade 3	1,800 to 2,000
Grade 4	2,000 to 2,600
Grade 5	2,600 to 3,500

Professional

Grade 6	$3,500 to $4,400
Grade 7	4,400 to 5,600
Grade 8	5,600 and up
Grade 9	10,000 and up

ENGINEERING GRADES, DUTIES AND REQUIREMENTS

The grades of employment for professional engineers and their engineering assistants shall be as follows:

*Scholastic credit given for each successful year of engineering study is computed as one year's experience.

Sub-Professional

(Note—duties not listed because of space)

GRADE 1

Requirements: Education equivalent to graduation from high school. Reliability, aptitude, ability to work with others, compliance with oral and written instructions, neatness and good citizenship.

GRADE 2

Requirements: Education equivalent to graduation from a high school and two years progressive experience on engineering work.* Reliability, aptitude, ability to work with others, compliance with oral and written instructions, neatness and good citizenship.

GRADE 3

Requirements: Education equivalent to graduation from high school and four years progressive experience on engineering work.* Reliability, aptitude, ability to work with others, compliance with oral and written instructions, neatness, good judgment and good citizenship.

GRADE 4

Requirements: Graduation with a degree in engineering from an engineering school approved by the Washington State Board of Engineering Examiners plus one year of progressive experience on engineering work; or six years of progressive experience on engineering work* indicated for Grades 1 to 3 with at least two years experience as indicated for Grade 3. Reliability, aptitude, compliance with oral and written instructions, ability to work with others, neatness, good judgment and good citizenship.

GRADE 5

Requirements: Graduation with a degree in engineering from an engineering school approved by the Washington State Board of Engineering Examiners plus two years of progressive engineering experience of which at least one year shall be equivalent to Grade 4; or eight years of progressive experience on engineering work indicated for the lower grades, with at least one year's experience as indicated for Grade 4; ability to exercise engineering and technical judgment and skill, aptitude, initiative, resourcefulness, ability to develop; neatness, effectiveness in planning so as to utilize time of his group to best advantage, good judgment and good citizenship.

Professional

GRADE 6

Requirements: Graduation with a degree in engineering from an engineering school approved by the Washington State Board of Registration for Professional Engineers, plus four years of progressive experience on engineering work, of which at least one year shall be equivalent to that indicated for Grade 5: or ten years of progressive engineering work as indicated for the lower grades*, of which at least two years shall be equivalent to that indicated in Grade 5, capable of assuming responsible charge of engineering work; and have a license as a Professional Engineer in the State of Washington, or permission from the State Board of Engineering Examiners, to practice engineering in the State of Washington; initiative, aptitude, resourcefulness, ability to develop, effectiveness in planning so as to utilize time of his group to best advantage; good judgment and good citizenship.

GRADE 7

Requirements: Graduation with a degree in engineering from an engineering school approved by the Washington State Board of Engineering Examiners plus about eight years of progressive experience on engineering work of which at least two years shall have been in charge of engineering work of a character indicated for Grade 6; or fourteen years of progressive experience on engineering work as indicated for the lower grades*, of which at least two years shall be the equivalent of that indicated for Grade 6; aptitude, initiative, resourcefulness, ability to develop, good judgment and good citizenship; ability to prepare and deliver a technical address before a large audience and have a license as a professional engineer in the State of Washington or permission from the State Board of Engineering Examiners, to practice engineering in the State of Washington.

GRADE 8

Requirements: Education equivalent to graduation from an engineering school approved by the Washington State Board of Engineering Examiners. plus about eleven years of broad professional experience embracing a thorough knowledge of engineering and experience in business administration; ability to coordinate the activities to the various divisions of an organization, good judgment and good citizenship; ability to prepare and deliver a technical address before a large audience; and have a license as a professional engineer in the State of Washington or prmission from the State Board of Engineering Examiners to practice engineering in Washington.

GRADE 9

Requirements: Education equivalent to graduation from an engineering school approved by the Washington State Board of Engineering Examiners, supplemented by cultural, economic and social studies, plus about 15 years of broad professional and business experience, and have a license as a Professional Engineer in the State of Washington or permission from the State Board of Engineering Examiners to practice engineering in Washington.

Post War Education in a Post War World

(*Continued from Page* 13)

corporate investments and real estate is becoming less and less and the number of men of great wealth from whom additions to endowments have traditionally been drawn, fewer and fewer.

One frequently hears the pessimistic prediction that in the future only the state and municipal colleges and universities will survive the vast economic changes taking place. A more realistic view would seem to be that tax-supported education itself will be in competition for the tax dollar with tax-supported relief, tax-supported health services, and a score of other services. The inquiring taxpayer and the perspiring public administrator will scrutinize more and more closely the claims of the state-supported institutions of higher learning.

To summarize, I believe that education generally will take on a new pattern. A new integration of senior high school and junior college will provide maximum educational opportunities without burdening the upper college years with unsuitable material. Cooperative education will make the liberal arts program more realistic and the engineering and commerce program less narrowly vocational. It will enable more qualified students to go further and will reveal to the less qualified students the level to which they should aspire. Competition and duplication among colleges for staff, students, and equipment must be eliminated in the post-war period.

Post-war America will have staggering problems to solve. We shall have to have men and women who are not only adequately trained, but who honestly believe in their individual responsibility for the maintenance of free and honest political institutions, for the elevation of professional and business ethics, and for the preservation of freedom of speech and religious expression. The challenge to our democracy through the dark and confused period of world readjustment must be answered by the colleges and schools of America and by the men and women whom they make equal to the task.

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WHAT'S NEW

And Coming In The Whirl of Change

(News from industry — gathered by the publisher)

DEVELOPMENTS IN THE FIELD OF WATER WORKS AND SEWERAGE

by G. Gale Dixon

of Parsons, Brinckerhoff, Hogan & Macdonald, Engineers

Thinking back over the past twenty years, the aggregate of the developments which have occurred in water supply and sewerage practice is quite impressive.

In the field of hydrology, the number of stations recording rainfall and streamflow has been enormously increased; and of course just the passing of time results in the invaluable extension of records for the old stations. During this period, phenomenal floods and droughts have occurred in various parts of the country, and these have been more fully recorded than was possible in earlier and less highly organized days. Newer concepts of basic principles, with collateral improved technique in mathematical analysis have resulted in a much more dependable basis for the estimation of flood flows, which is a vital feature in the design of dams.

Laboratory experimentation with scale models as an aid in the design of hydraulic structures was relatively rare and crude a generation ago. There are now a good many excellently equipped hydraulic laboratories in the country, and resort to their use in the solving of difficult problems has become the rule. The permanent value of the cumulative practical knowledge which already has resulted from experimentation with many forms of structures is enormous.

The new science of soil mechanics has been intensively developed in reference to earth dams, and this understanding of fundamental theory, together with radical improvements in earth-moving equipment, has resulted in the economical construction of many successful earth dams under difficult conditions, including some of monumental size for regulating river flow for various purposes. There have been some failures during construction, but in these we can take satisfaction that the knowledge born of failures is positive and is profoundly impressed.

In water purification, there has been no startling invention or discovery, but a steady broadening and refinement in water chemistry and biology, in control of plant processes, and continuing progress in improvement of preliminary treatment and conditioning.

The functional design of the structures employed in preliminary treatment has changed with growing appreciation of the importance of accomplishing a practical approximation of optimum conditions for the reactions to take place in the highly dilute chemistry involved, and for the subsequent process of sedimentation to occur. Great improvements have been made in machines for accurately feeding the desired quantities of chemicals, and in design of basins and equipment for thoroughly mixing the applied solutions through the volume of the water to be treated. "Reaction chambers" have been developed to permit the necessary lapse of time to occur, with mechanical equipment to insure full diffusion of chemical and dispersion of floc, and to prevent premature precipitation of heavy floc. In the design of plain settling basins, attention has been concentrated on distributing the flow uniformly over the cross section at entry and thereafter maintaining uniformity of flow, with a minimum of disturbance by structural obstructions and with horizontal flow in a straight line from inlet to outlet.

Equipment originally designed for other purposes was applied in the continuous removal of sludge from specially designed settling basins, and its use became very nearly universal in handling the heavy sludges deposited in water softening processes and in the treatment of highly turbid waters. In addition to the advantages resulting in the actual handling of the sludge, continuous—or frequent—operation maintains a uniform condition of depth for the treated water in process of sedimentation.

In the recent past, attention has been directed toward the development of upward flow settling tanks, which have particular merit in softening and iron removal processes. The treated water is introduced at the center of the bottom of a circular tank, moving slowly upward and outward to flow over a circular weir at the periphery of the tank. The incoming water must pass upward through a blanket of suspended sludge, with marked improvement in the completion of the reactions and in agglomeration of particles of floc. Constant level of sludge may be readily maintained by draw-off from a hopper-bottomed tank. There are several commercial designs of this general type, which may combine "flash mix" and "reaction chamber" effects in the same tank.

There has been no significant change in the design of the rapid sand filter, which in essentials has given satisfactory service for many years. The principal operating complaint has had to do with incomplete results in the backwashing of filters at the end of the run. In some plants "mud-balls" have accumulated in the sand bed to the point of

(*Continued on Page* 27)

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inconvenience if not embarrassment. Some 15 years ago the relation between temperature and viscosity of the water and efficiency of wash was realized, and since then various plants have been built equipped to wash at rates as high as 36 inches per minute vertical rise, during the summer months when the water has least viscosity. Many older plants with lower rates of wash have overcome their troubles by installing a device which further agitates the upper portion of the sand by means of supplementary water jets.

Chlorination equipment has been steadily improved, and large progress has been made in the control of tastes and odors.

The efficiency of centrifugal pumps has advanced year by year until the best performance has nearly reached the "mechanical efficiency" of the old time high-duty pumping engines—at a fraction of the first cost. Electric motor drive of important pumping stations, rare 20 years ago, is now quite common.

In the manufacture of water mains, thinner-shelled higher-strength cast iron pipe made by several processes has in large measure supplanted the old standard sand-cast pipe. There is growing use of centrifugally applied cement mortar or bituminous lining, in the interest of avoiding tuberculation. A highly practical method has been developed for the application of cement mortar lining to pipes in the ground, which is especially valuable in the reconditioning of large steel pipes which have been damaged by corrosion. Large reinforced concrete pipes are now being made with an inner concrete ring prestressed so it will not crack when internal pressure is applied. Asbestos-cement pipe has developed a considerable production in moderate sizes. Copper tubing found a large market for service connections before the wartime demand for copper occurred.

In the sewerage field, the same or similar influences have been at work, with roughly similar results.

There has been no striking change in sewer construction. Vitrified clay pipe is still the standard for small sewers, with some use of concrete pipe where market conditions are favorable. Reinforced concrete is used for large servers, with special vitreous linings as conditions may require.

Thorough experimental research has been made to determine the loads to which a pipe is subjected in a trench under the various conditions encountered in actional construction, and the strength of resistance both of cast iron pipe and of sewer pipe for the several practical types of bedding in the trench. The criteria thus established are particularly important in sewer work, with its usual condition of relatively deep trench and fragile pipe.

The treatment of municipal sewage and of industrial wastes has spread enormously with the increase in public recognition of its importance to health. Cities have learned to be proud, instead of ashamed, of such works and, while budgetary problems are ever present, the employment of adequately trained operators has become the rule. There is a growing tendency toward permitting the sewerage utility to stand financially on its own feet by means of a direct charge to each customer based upon the quantity of water used.

There has been no change in the basic principles of sewage treatment, but great progress in understanding and applying them to best advantage.

By the year 1920, the advantage of separate tanks for the settling out and for the digestion of sewage sludge had begun to be appreciated, as compared to the use of the two story "Imhoff tank" which was designed to accomplish both purposes. The separate digestion process has been thoroughly developed, with excellent lines of the necessary equipment. The methane gas generated by anaerobic decomposition of the sludge is collected and used in internal combustion engines, for heating the digesting sludge in cold weather, or disposed of by waste burning.

The activated sludge process still maintains its record of high degree of purity of effluent, but it is relatively expensive and requires great skill in control of operation.

Chemical precipitation finds its best field where the handling of trade wastes justifies the cost of chemicals.

A new method of use of the trickling filter appears to have good prospects of superseded-

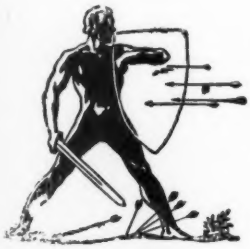
(*Continued on Page* 28)

Bonds are essential

"It is clear that when the bond requirement is waived, labor and material men, as well as the Government, lose a form of protection which they have enjoyed for almost half a century."

From an article entitled:

"Restoration of Bond Requirements Will Aid War Effort" by Edward H. Cushman of the Philadelphia and District of Columbia Bars, appearing in "Credit and Financial Management" for April, 1943—*A reprint in pamphlet form will be mailed without cost on request to*



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ing the activated sludge process where high degree of purification is required. This involves continuous operation of the filter at high rate of application of settled sewage, with the effluent re-circulated through the primary settling tank and repassed through the filter one or more times. Numerous plants of this type have been built for developments in connection with the war effort, and the records of their operation will measure the relative merit of the design.

The developments outlined in the foregoing paragraphs may lack the spectacular nature of some which have been recorded in other fields of applied science, but they stem from the same root; they are the cumulative result of the initiative, ingenuity and pains-taking work of a great number of able men, each giving his best effort in his own particular field, be it theoretical research, engineering design, manufacture, construction or operation.

Each of the now great number of treatment plants for water and for sewage is in effect a laboratory for research in its own peculiar local problems. Special investigations are continually carried on by the research organizations of universities, government agencies and commercial interests. The professional associations and the engineering journals have performed great work in assembling, coordinating and publishing the results of research, experiment and actual operation. Public health authorities have made special contribution to progress in establishing and enforcing regulations, including the qualifications of plant operating personnel, and the education of and stimulation of interest in both operating personnel and public.

In the tremendous war effort which the country is now making, the vital importance of adequate water supply and sewerage facilities has ben forcibly brought to general attention in a thousand instances. The public is more sensitive to sanitary problems than ever before, and it is believed that we may look for still greater activity, particularly in the field of sewage treatment, when the current national emergency is past.

Future developments may be expected to be subject to the same influences that will operate in other fields. The radical advances in chemistry, metallurgy and physics will all in some measure have their effect. Aluminum is already largely in use in sewage treatment plants in substitution for ferrous metals which corrode with great rapidity under some conditions. A cheap high strength non-corrodible alloy may present itself as a more satisfactory material for large water pipes. A smooth and non-corrodible plastic may be the answer for waer service connections. and for house piping. Electro-chemistry may eventually revolutionize treatment processes for water and sewerage.

At least we may be sure that the body of men who follow in the foot-steps of those who have brought hydraulic and sanitary engineering to its present well-rounded development will be alert to the possibilities of practical application of each new advance in scientific knowledge.

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